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The Journal of Speech and Hearing Disorders

Published by the American Speech Correction Association

VOLUME 13 MARCH, 1948 NUMBER 1

TABLE OF CONTENTS

	Page
Lee Edward Travis	1
Robert West	3
Walter Hughson	5
Herbert Koepp Baker	7
Report of the 1947 Convention	8
Present Concepts of Laryngeal Disease — Francis L. Lederer	11
Letters to the Editor	18
Leopold Treitel on Stuttering — Morris Val Jones	19
Twenty-five Years of Cleft Palate Prosthesis — Cloyd S. Harkins and Herbert Koepp Baker	23
Infant Speech: Development of Vowel Sounds — Orvis C. Irwin	31
Fundamentals in the Treatment of Communicative Disorders Caused by Hearing Disability: Part I — Miriam D. Pauls and William G. Hardy	35
Studies in Clinical Techniques: Part III. Mandibular Facet Slip — Martin F. Palmer	44
The Speech Correction Foundation — Wendell Johnson	49
Speech Survey Methods in Public Schools — Vanetta R. Suydam	51
Ohio Looks Ahead in Speech and Hearing Therapy — Ruth Becky Irwin	55
Make Mother a Clinician — Herold Lillywhite	61
The Speech Correctionist on the Cerebral Palsy Team — John C. Snidecor	67
Practical Techniques in Speech Training for Cleft Palate Cases — Charlotte G. Wells	71
News and Announcements — Miriam D. Pauls, *Editor*	74
Abstracts of Current Articles — Mary Huber, *Editor*	82
Book Reviews — Ernest H. Henrikson, *Editor*	87

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The Journal of Speech and Hearing Disorders is published quarterly in March, June, September and December of each year by the American Speech Correction Association. Publication Office, 19-27 North Jackson Street, Danville, Illinois. General Business Office, Speech Clinic, 322 Derby Hall, Ohio State University, Columbus, Ohio. Editorial Office, Psychological and Speech Clinic, State University of Iowa, Iowa City, Iowa. Subscription: $3.50 per year; Canada and foreign, $4.00. Single copy, $1.00. Entered as second-class matter at the Post-Office in Danville, Illinois, under Act of Congress of March 3, 1879. Printed by The Interstate, Printers and Publishers, Inc., 19-27 North Jackson Street, Danville, Illinois.

The Journal of Speech and Hearing Disorders

VOLUME 13 MARCH, 1948 NUMBER 1

The American Speech Correction Association
Presents
THE HONORS OF THE ASSOCIATION
to

LEE EDWARD TRAVIS

The Council of the American Speech Correction Association votes unanimously that: *the Honors of the Association for distinguished contribution to the field of speech correction be awarded to Professor Lee Edward Travis, a statement of this award to be published in the March, 1948, issue of the* Journal of Speech and Hearing Disorders, *together with a portrait of Professor Travis and a summary of achievements for which the award is granted.*

—Action of the Council, American Speech Correction Association, in convention at Salt Lake City, Utah, December 31, 1947.

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I. Biographical Summary

Travis, Lee Edward, psychologist and speech pathologist, author; b. Imperial, Nebraska, June 23, 1896; m. Leona Pearl Jones, May 23, 1918; ch. Paul Edward, Knight, Duane Charles; m. Lysa Howard, December 2, 1946.

Graduated from Graceland Academy, 1915; Graceland Junior College, Lamoni, Iowa, 1917; State University of Iowa: B.A., 1922; M.A., 1923; Ph.D., 1924.

Fellow of the National Research Council, 1924-1927, with period of study abroad; Associate Professor of Psychology, State University of Iowa, 1927-28; Professor of Psychology, Director of Psychological and Speech Clinic, and Psychologist to the Psychopathic Hospital, State University of Iowa, 1928-38; Head of the Department of Psychology, State University of Iowa, 1937-38; Professor of Psychology and Director of Psychological Clinic, University of Southern California, 1938-42; Lt. Col. AC, OIC Psychological Services SAAAB, Santa Ana, California, 1942-46; Professor of Psychology and Speech, Head of the Department of Speech, University of Southern California, since 1946.

Fellow, American Speech Correction Association (past president); American Psychological Association; American Physiological Society; Society for Experimental Biology and Medicine; Speech Association of America; National Society for the Study of Education (editor 34th yearbook); Sigma Xi; Phi Beta Kappa; Sigma Pi.

Author, *Speech Pathology*, 1931; *Contributions to Handbook of Child Psychology*, 1933; *Personal Problems of Everyday Life*, 1941; *You're Out of the Service Now*, 1946; technical and general articles and monographs.

Listed in *Who's Who in America, International Who's Who, American Men of Science*, and *Who's Who in American Education*.

II. Contribution To Speech Correction

Seldom in the history of human knowledge has one man assumed as heavy a share of responsibility for the cultivation of a particular area of investigation and scholarship as Professor Lee Edward Travis has assumed for the scientific and clinical refinement of speech pathology. The history of speech pathology can be divided, in a particularly meaningful way, into the pre-Travis period and the period following the beginning of Professor Travis' major work in 1925.

As a young man, with extraordinary aptitude for scientific investigation, Lee Edward Travis was selected in 1922 by Professor Carl E. Seashore, now Dean Emeritus of the Graduate College, State University of Iowa, to undergo a specially designed program of training, cutting across traditional departmental lines in such a way as to provide a scientific foundation adapted to the distinctive requirements of a professional career in speech pathology.

From these origins, the speech pathology program at the State University of Iowa was steadily improved and expanded under the compelling leadership of Professor Travis up to 1938, when he went to the University of Southern California where he continues his ingenious and vigorous works on the expanding frontiers of scientific understanding.

Professor Travis has produced a truly impressive number of important scientific, clinical, and theoretical publications. He has originated numerous laboratory and clinical methods and has refined many procedures originated by others. He has trained, at the Ph. D. level, more professional workers in speech pathology than any other teacher, and in addition to these he has trained many graduate students in the field of psychology, as well as an impressive number of speech correctionists who hold the B. A. and M. A. degrees.

The ties that bind these students and former students to the warm, vivacious, brilliant friend whom they call 'the Chief' are indeed strong. By all who know his scientific and humanitarian works and their ever-enriching influence, he is highly esteemed.

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The American Speech Correction Association

Presents

THE HONORS OF THE ASSOCIATION

to

ROBERT WEST

The Council of the American Speech Correction Association votes unanimously that: *the Honors of the Association for distinguished contribution to the field of speech correction be awarded to Professor Robert West, a statement of this award to be published in the March, 1948, issue of the* Journal of Speech and Hearing Disorders, *together with a portrait of Professor West and a summary of the achievements for which the award is granted.*

--Action of the Council, American Speech Correction Association, in convention at Salt Lake City, Utah, December 31, 1947.

I. Biographical Summary

West, Robert, speech pathologist, author; b. Reedsburg, Wisconsin, November 26, 1892; m. Gladys Cartwright, 1916; ch. Robert C.

Graduated from Public High School, Milton Junction, Wisconsin, 1912; B.A., Milton College (Wisconsin), 1916; M.A., University of Wisconsin, 1920; Ph.D., University of Wisconsin, 1925.

Associate, Department of Speech, State University of Iowa, 1919-1921; Assistant Professor of Speech, University of Wisconsin, 1922-1926; Associate Professor of Speech, University of Wisconsin, 1926-1928; Professor of Speech Pathology, University of Wisconsin, since 1928; Director, Speech Clinic, University of Wisconsin, since 1928. Summers, Professor of Speech, University of Michigan, 1929, 1930; Utah, 1939; Hawaii, 1941; University of Southern California, 1947. Chairman, Subcommittee, Child Defective in Speech, White House Conference Child Health and Protection, 1930; Member, Psychology Examining Board, Camp Wheeler, Georgia, M.C., 1917-1919.

Member, American Speech Correction Association (president, 1926-1928; chairman, Membership Committee, 1928-1930); Speech Association of America (president, 1943); Consultant on Aphasia, Veterans Administration, since 1946.

Author, 'Disorders of Speech, Reading and Writing' in *Practice of Pediatrics* (Brennemann), 1945; co-author, *The Rehabilitation of Speech* (West, Kennedy and Carr), 1947; co-author, *Phonetics* (Kantner and West), 1941; co-author, *Special Education of the Handicapped and Gifted* (Subcommittee, Child Defective in Speech, White House Conference on Child Health and Protection), 1931; author, eight technical articles.

II. Contribution To Speech Correction

To those who work with disordered speech the leadership and influence of this man are so obvious as to need no description. The outline above summarizes a lifetime of achievement for the profession. A great researcher, writer, teacher, and person, his contributions to the rehabilitation of speech have found their way into every speech clinic and speech classroom in the world.

Robert West the experimenter is an inquisitive explorer of new lands. Swift to appreciate the technical advances of tangent disciplines, he has adapted them as instruments for discovery in his own. His investigations, astounding in their breadth in these days of specialization, span such areas as organic disorders of speech, psychogenic problems, hearing disabilities, physiology of speech, experimental phonetics, and psychophysics of audition.

With characteristic verbal facility Dr. West has reported his experimental findings in a long list of publications. His many contributions to the research literature are familiar to all students of the field. His widely used and distinguished textbooks reveal, in addition to mastery of content, a flair for organization and synthesis, and a firm sense of professional balance.

Professor West the teacher is famous for the quality of his students, who are uniformly well-informed and clinically skilled, and who are, in their turn, making rich professional contributions. Few professors in America are regarded by their students with greater allegiance, admiration, and affection. As an educator his influence has extended beyond his own classroom. Steadfastly insisting upon rigorous training standards and upon breadth of study in the related sciences, he has been an important determiner of Association policies.

As a person Bob West is warm, friendly, genial; ingenious and imaginative; wise; versatile; exacting; vigorous, persistent, fearless, and strong. He is respected and loved by his colleagues.

The American Speech Correction Association

Presents

THE HONORS OF THE ASSOCIATION

to

WALTER HUGHSON

The Council of the American Speech Correction Association votes unanimously that: *the Honors of the Association for distinguished contribution to the field of speech correction be awarded posthumously to Dr. Walter Hughson, a statement of this award to be published in the March, 1948, issue of the* Journal of Speech and Hearing Disorders, *together with a portrait of Dr. Hughson and a summary of the achievements for which the award is granted.*

—Action of the Council, American Speech Correction Association, in convention at Salt Lake City, Utah, December 31, 1947.

I. Biographical Summary

Hughson, Walter, surgeon, otologist, audiologist, author; b. East Orange, New Jersey, August 4, 1891; d. September 13, 1944.

Graduated, Princeton, 1914; Johns Hopkins Medical School, 1918; interned, Union Memorial Hospital, Baltimore, Maryland, 1918 to 1920; certified, American Board of Otolaryngologists, 1936; practice limited to otolaryngology and rhinology.

Assistant and instructor in anatomy, associate in applied anatomy and surgery, clinical surgery, research otology, associate professor of otology, surgery, and associate surgeon, Johns Hopkins Medical School; instructor and associate in otolaryngology, Graduate School, University of Pennsylvania; instructor in techniques of examining deafened patients, U. S. Naval Hospital, Philadelphia; visiting lecturer in otolaryngology and director, Otological Research Laboratory, Abington Memorial Hospital, Abington, Pennsylvania; consultant to Bureau of Child Hygiene, U. S. Public Health Service.

Member, Committee on Conservation of Hearing, American Academy of Ophthalmology and Otolaryngology; American Laryngological, Rhinological and Otolaryngological Society; American Otological Society; Philadelphia Medical Society; American Association of Anatomists, American Medical Association.

Author and co-author, 66 technical articles, including 40 articles in the field of hearing.

II. Contribution To Speech Correction

The career of Dr. Walter Hughson combined scholarly research in the basic and clinical sciences and outstanding clinical service. Like other brilliant as well as productive individuals, he was competent in so many ways that it is difficult to select one label which will describe his professsional contributions. The personal warmth and insight which he showed in the handling of cases would lead one to say that he was a model of what is desirable in a clinician's personality. The scientific overlay on these humane qualities led him to the exploration of new procedures for diagnosis and therapy. He might, therefore, best be described as a 'clinical scientist.' In all aspects he has accelerated the development of speech correction and audiology.

Born at East Orange, New Jersey, on August 4, 1891 Walter Hughson was graduated from Princeton in 1914 and from Johns Hopkins Medical School in 1918. After a two-year medical internship and residency at the Union Protestant infirmary in Baltimore, he returned to Johns Hopkins as a staff member in the medical school, serving as a teacher of anatomy and later instructing in surgery.

Of particular importance to speech correctionists is the work which Dr. Hughson carried out, with Dr. L. H. Weed, on the innervation of the facial muscles. In 1926, he opened a private practice in surgery but continued on the Johns Hopkins staff as a visiting lecturer.

A severe illness left Dr. Hughson totally deaf in one ear in 1930. This condition aroused his interest in the problems of deafness. As a young physician he had already achieved recognition in anatomical study and surgery. Devoting the last fourteen years of his life to the field of audiology, he became even more outstanding in that area. The first few years of his audiological activities were spent as a staff member in the Department of Otolaryngology at John Hopkins. His last ten years were spent as director of the Abington Memorial Hospital outside of Philadelphia. The research during this last phase of his life covered subjects ranging from the effect of experimental lesions on cochlear potentials in animals to evaluating the effectiveness of different methods of instruction for deaf children.

Long before World War II, Dr. Hughson had set up a clinic for hearing aid evaluation, recognizing all of the nonmedical services which contribute to the complete rehabilitation of acoustically handicapped persons. During the war he functioned in an advisory capacity in organizing rehabilitation centers for the aurally handicapped.

Probably no other person has done more to permit speech correctionists the opportunities they have had to demonstrate their competence in aural rehabilitation than Dr. Hughson.

RETIRING PRESIDENT
of the
AMERICAN SPEECH CORRECTION ASSOCIATION

HERBERT KOEPP BAKER

Resolved: That the American Speech Correction Association voice its esteem for its retiring President, Professor Herbert Koepp Baker, and acknowledge its very substantial debt to him for the professional acumen, the dignity, and graciousness with which he has exercised leadership in the Association's affairs. His extraordinary ability to initiate, receive, and administer mature and inspired counsel has greatly enriched and extended the Association's sphere of professional and social significance.

—The American Speech Correction Association, in convention at Salt Lake City, Utah, December 31, 1947.

REPORT OF THE CONVENTION OF THE AMERICAN SPEECH CORRECTION ASSOCIATION

SALT LAKE CITY, UTAH

December 28 to 31, 1947

I. Council Meetings

December 28, 1947, 7:30 p. m.

Council members present at this meeting were Martin F. Palmer (presiding) and Elvena Miller.

December 29, 1947, 11:00 a. m.

Council members present at this meeting were Wendell Johnson (presiding), Elvena Miller, D. W. Morris and Martin F. Palmer.

The report of the Committee on Education was begun, and the meeting was adjourned.

December 30, 1947, 9:30 a. m.

Council members present at this meeting were Herbert Koepp Baker (presiding), Grant Fairbanks, Wendell Johnson, Elvena Miller and Martin F. Palmer.

Applications for Advanced Standing: It was moved by Johnson that the Committee on Education be authorized to act for the Council on all applications for advanced standing. Motion passed.

Secretary-Treasurer's Report: A report on the financial status of the Association (report filed separately), including a summary of the progress in office reorganization, was made by Morris. The report was accepted and approved.

Graduate Record Board: It was moved by Fairbanks and seconded by Johnson that the Committee on Education serve as an advisory committee to the persons delegated to represent the Association in the preparation of an examination for the Graduate Record Board. Motion passed.

Harold Westlake and Spencer F. Brown were nominated as representatives of the American Speech Correction Association in the preparation of an examination for the Graduate Record Board.

The meeting was adjourned.

December 31, 1947, 8:00 a. m.

Council members present at the meeting were Herbert Koepp Baker (presiding), Grant Fairbanks, Wendell Johnson, Elvena Miller, D. W. Morris and Martin F. Palmer.

Associate Applications: It was moved by Morris that challenged associates be referred to the Committee on Education with power to act. Motion passed. Associates approved will be listed at the end of the Minutes.

Nomination of Officers: The following persons were nominated for offices to become effective January 1, 1948:

President—Martin F. Palmer
President-Elect—D. W. Morris
Vice-President—Spencer F. Brown
Secretary-Treasurer*
Councillor—Charles R. Strother (3-year term)
Councillor—Grant Fairbanks (3-year term)
Councillor—Robert West (2-year term)
Councillor—Eugene McDonald (1-year term)

*It was moved by Fairbanks that the Business Meeting be requested to authorize the Council to elect a Secretary-Treasurer on the basis of necessary negotiations with persons and universities concerned. Motion passed.

Change of Name of Association: It was moved by Palmer and seconded by Fairbanks that the Council recommend to the Business Meeting an amendment to the Constitution to change the name of the Association so as to include reference to the area of hearing rehabilitation. Motion passed.

Small Dictionary: It was moved by Morris and seconded by Fairbanks that the Council approve an increased cost in the *Student's Dictionary*, total cost not to exceed $800.00. (See Council Minutes, 1944.) Motion passed.

Committee on Terminology: It was requested by Stinchfield that a Standing Committee on Terminology be appointed, in order that the work on classification of disorders of speech may be kept up-to-date, and that the committee consist of four members, two of whom shall be appointed in 1948 for one year and two in 1948 for two years, and beginning in 1949 two each year by the incoming president for a term of two years; that one or two members of the present Committee on Nomenclature be appointed to the Committee on Terminology for a two-year term in order that the work

may be carried on without a sudden change of policy. Motion moved, seconded, and passed.

C. K. Thomas Protest on Dues: It was moved by Johnson that C. K. Thomas's protest on the increase of dues be acknowledged and filed. Motion passed.

Joint Membership: It was moved by Fairbanks and seconded by Johnson that the American Speech Correction Association offer its services to any state organization in the planning of joint memberships with state speech correction associations. Motion passed.

Certification Services: It was moved by Morris and seconded by Palmer that as a matter of policy the Association affirm its willingness to comply with requests for services of certification of the American Speech Correction Association. This type of service will be made available to the extent practical in the light of time and expense involved. Motion passed.

Veterans Administration, Vocational Rehabilitation and Education: It was moved by Miller that Morris be authorized to send the following telegram to the Veterans Administration:

> H. V. Sterling, Assistant Administrator
> Vocational Rehabilitation and Education
> Veterans Administration
> Washington, D. C.
>
> Just returned from annual convention American Speech Correction Association, Salt Lake City. Am instructed by Association to request interview with you to explore four questions:
>
> (1) What can be done to alleviate the technical difficulties in negotiation of contracts for speech correction and hearing rehabilitation at local levels?
>
> (2) What steps can be taken to provide more complete and detailed information to your local representatives concerning specific functioning of speech and hearing rehabilitation programs?
>
> (3) What measures have been taken to distribute standard information to professional personnel as discussed in our previous conferences?
>
> (4) What steps are being followed to assure limitation of contracts to professionally qualified clinics and individuals?
>
> I will be in Washington January 8. Please advise when an appointment can be arranged.
>
> D. W. Morris,
> Secretary-Treasurer,
> American Speech Correction Association
> Ohio State University
> (Extension 382)

Honors of the Association: In consideration of the recommendations of the Committee on Association Honors, the Council acted to award the Honors of the Association, in recognition of outstanding and distinguished service to the late Walter Hughson, to Lee Edward Travis, and to Robert West. Citations commemorating these awards shall be published in the *Journal of Speech and Hearing Disorders.*

Advanced Applications: It was moved by Miller and seconded by Baker that the Committee on Education be authorized to act upon applications which are received prior to and including January 15. Motion passed.

The meeting was adjourned.

II. Business Meetings

December 29, 1947, 7:30 p. m.

The meeting was called to order by President Herbert Koepp Baker.

The Minutes of the 1946 meeting were accepted and approved.

The Report of the Secretary-Treasurer, summarized orally by D. W. Morris, was accepted and approved with commendations.

The Report of the Committee on Education, presented orally by Martin F. Palmer, was accepted and approved with commendations.

The Report of the Foundations Committee, presented orally by Wendell Johnson, was accepted and approved.

A report was made by Herbert Koepp Baker on relations with the Graduate Record Board concerning plans for a graduate study examination in Speech Pathology.

1949 Convention: It was moved by Morris and seconded by Palmer that a representative or representatives be appointed to meet with representatives of the S.A.A. and the A.E.T.A. to select a time (other than Christmas) and a place for the 1949 convention. Motion passed.

The meeting was adjourned.

December 31, 1947, 1:00 p. m.

The meeting was called to order by President Herbert Koepp Baker.

Council Actions Approved: The Council actions to date during the Convention were summarized by Baker. It was moved by Morley and seconded by Johnson that the members present endorse and approve the actions of the Council to date in this convention. Motion passed.

Constitutional Amendment: It was moved by Pauls and seconded by Morley that the Constitution be amended to change the name of the Association to include reference to hearing rehabilitation, with the Council empowered to select a final wording, and with the Secretary-Treasurer au-

thorized to make the necessary changes in the Constitution. Motion passed.

Officers of the Association: The members nominated for officers and councillors during 1948 were unanimously elected. Fairbanks' motion that the Council be authorized to elect a Secretary-Treasurer on the basis of necessary negotiations with persons and universities concerned was approved.

Resolutions: The following resolutions were read for the Resolutions Committee by Elvena Miller and were unanimously approved:

Resolved: That the American Speech Correction Association voice its esteem for its retiring President, Professor Herbert Koepp Baker, and acknowledge its very substantial debt to him for the professional acumen, the dignity, and graciousness with which he has exercised leadership in the Association's affairs. His extraordinary ability to initiate, receive, and administer mature and inspired counsel has greatly enriched and extended the Association's sphere of professional and social significance.

Resolved: That the American Speech Correction Association express with enthusiastic unanimity its gratitude and thoroughgoing respect for the astute program planning and the great amount of efficient labor performed during the past year by its retiring Vice-President, Professor Grant Fairbanks and by the Program Committee which has functioned under his very constructive chairmanship.

Resolved: That the American Speech Correction Association express its deep appreciation of the constructive and comradely cooperation of the Speech Association of America during the year just ending, with particular reference to the convention now in session. We are especially mindful of the extraordinary labors of Professor Rupert Cortright, Vice-President of the Speech Association of America, in assisting our Program Committee, and of Professor Wallace Goates and his committee in making local arrangements for our convention.

Resolved: That the American Speech Correction Association acknowledge with deep appreciation the fundamental value to the Association's professional purposes of the achievement of the Speech Association of America, through its Executive Vice-President, Professor W. Hayes Yeager, in securing for the profession of speech pathology inclusion in the areas covered by the Graduate Record Board examinations.

Resolved: That the American Speech Correction Association formally express its great appreciation and high regard for the unusual competence and unselfish service during many years of its distinguished retiring Secretary-Treasurer, Professor D. W. Morris. He has discharged the duties of his office in such a manner that the Association has grown impressively and has achieved a secure fiscal condition. The magnitude of Professor Morris' contribution to our profession will be appreciated increasingly as long as the American Speech Correction Association shall live.

Resolved: That the American Speech Correction Association commend its retiring Councillor, Professor Ernest Henrikson, for the consistently conscientious and competent manner in which he has discharged the responsibilities of his office.

Resolved: That the members of the American Speech Correction Association and all friends of speech correction have been saddened by the news of the death of Miss Pauline B. Camp, in her home at Cave Springs, Georgia, on April 9, 1947. Miss Camp was one of the truly great pioneers in work with speech handicapped children. Her beneficent influence has been felt throughout our land, and the world is the richer for her having moved among us.

Ohio State University: It was moved by Morley and seconded by Strother that the President of the Association write a letter to the appropriate official at Ohio State University expressing for the Association gratitude to Ohio State University for providing housing for the Office of the Secretary-Treasurer of the Association, and for material assistance with office personnel. Motion passed.

New President: The presidential chair was yielded by Herbert Koepp Baker to the new president, Martin F. Palmer.

The meeting was adjourned.

JOURNAL OF SPEECH AND HEARING DISORDERS, 1948, **13**, 11-17

Present Concepts of Laryneal Disease

Francis L. Lederer*

MORE THAN 110 years ago, Trousseau and Belloc (**10**) presented, in a lecture to the Royal Academy of London the following statements regarding their concept of laryngeal disease:

'The palpable neglect of (these) principles of pathological anatomy has given rise to serious errors, and has caused ingenious theories of diseases of the larynx founded upon misinterpertation of the facts . . . . To have provided a curative plan, is to deserve well of science; and we are happy to think that some patients owe us their lives and health. . . . As the ancients possessed a very limited knowledge of these diseases, we should not anticipate deriving much information respecting the treatment from a perusal of their writings. . . . Rest is the most indispensable adjuvant in the treatment of laryngeal diseases. It is evident that when the glottis is in constant motion from the act of phonation, and incessantly agitated by vibrations of air, it cannot be easily cured. The patients should speak in an undertone, or even content themselves with writing on a slate. Experience has taught us that no inconvenience arises from speaking in this manner, although the patients sometimes make great efforts to render themselves more intelligible to their hearers. All physicians who have treated these diseases know the difficulty of obtaining this state of rest. There are few patients whose social relations will allow them to be condemned to silence for several months.'

These statements taken from the scholarly prize essay before the Royal Academy still hold as modern concepts of 1947. The essay also contains descriptions of catheterization, or intubation, of the larynx; makes reference to the procedure of placing a finger over the lumen of a tracheotomy tube to produce a loud voice; includes a learned discussion on the voice, on cauterization of ulcerations with silver nitrate, on inhalations of dry or moist vapors, and on the instillation of solutions into the larynx by means of a curved syringe.

It is the more remarkable that all of this progress was made before Liston (**8**, 417) stated in London, 1840, that 'a view of the parts may sometimes be obtained by means of a speculum—such a glass used by dentists on a long stalk, previously dipped in hot water, introduced with its reflecting surface downwards, and carried well into the fauces.' For some unknown reason, a London singing teacher, Manuel Garcia (**2**), has been credited with the discovery of the laryngeal mirror. In 1854 he stated, 'The method which I have adopted is very simple. It consists in placing a little mirror, fixed on a long handle suitably bent, against the soft palate and uvula, in the throat of the person experimented on. The party ought to turn himself toward the sun, so that the luminous rays falling on the little mirror, may be reflected on the larynx.'

According to Türck (**12**), Trousseau and Belloc made reference to the fact that Bennati, some years after a mechanic named Sellique (Paris, 1832) had introduced a laryngeal mirror, saw the vocal cords with this mirror but discarded the instrument as being impractical.

*Francis L. Lederer (M.D., F.A.C.S.) is Professor and Head of the Department of Otolaryngology, University of Illinois College of Medicine, Chicago.

I

History becomes a matter of great controversy when one attempts to credit the proper individual with prior rights to achievement. For half a century this question of prior rights to indirect laryngoscopic achievement was fought over in meetings, and the fury of the controversy carried over the high seas. Prominently mentioned in the arguments were Bozzini of Frankfurt-am-Main who in 1807 described a double cannula with a mirror placed at the end, Senn of Geneva who in 1827 tried to use a small mirror in the pharynx to see the parts below, and Benjamin Babington of London who in 1829 presented a laryngeal mirror which he called the 'glottoscope.' Each worker doubted the fact that others had viewed the larynx. This doubt was expressed by statements like the following: 'He might have seen the epiglottis or the superior opening of the larynx, but as for the glottis, it is situated at such a depth and in such a manner that it is impossible to see it with the speculum even in the cadaver, while the irritation of the pharynx in the live subject renders it still more inaccessible, even in those who are accustomed to it.' It is clear that progress was impeded by all of this negativism and even by a lack of interest on the part of physicians of that era. While Garcia has been called the 'Father of Laryngoscopy,' he became so only because he did much to popularize the procedure.

It is to Türck (**12**) (Vienna, 1848) that credit for the diagnostic employment of the laryngeal mirror must be conceded, and the use of artificial illumination (lamplight) must be credited to Johann Czermak (Budapest, 1859) who utilized the Helmholtz-Ruete eye mirror as a reflector. It is worthy of note that Czermak was a physiologist.

Türck contributed to the advance of laryngoscopic interpretation by devising mirrors of various shapes and sizes. It is clear from his writings that mirrors for reflecting sunlight into the upper respiratory passages were in general use at the time—not only those attached to a head band (devised by Kramer) but also types held between the teeth and others attached to spectacle rims (devised by Semeleder). Indirect laryngoscopy, in combination with careful autopsy study, led to Türck's excellent 'Atlas' (**11**) which contained well-colored lithographs.

Türck was a prolific writer. The unprecedented strife that took place between Türck and Czermak for priority recognition reached the porportions of an international crisis. They carried their ideas and their warfare into France, where they both gave public exhibitions and lessons in the new art. A commission of the Academy of Sciences of the Imperial Institute of France, in investigating their rival claims, did not choose to delve into the question of priority but accorded them both honorable mention and suggested that 1,200 francs for each be added to this honor (**14**, 209).

While endoscopic means of entering the esophagus had been suggested as early as 1807 by Philip Bozzini of Frankfurt, it was not until 1895 that Kirstein used the first tubular spatula for direct laryngoscopy. Progress was rapid thereafter and present laryngologists, profiting from the pioneering efforts of Chevalier Jackson, Fletcher Ingals, Gustav Killian and others in this country and abroad, have been able to carry on successfully. Appreciation of the scientific level attained by modern laryngology is possible only by a familiarity with the history of the development of the medical sciences. Empiricism and technical primitiveness have given away to scientific progress and technical perfection. As long as laryngology was considered a limited field, it remained barren of real progress. When it was recognized as neither anatomically or physiologically independent, but as an integral part of the human biological economy, the foundation was laid for rational approaches to progress.

II

In the assessment of progress in the treatment of specific diseases of the larynx, we should recognize our indebtedness to chemotherapeutics. Up to the time of introduction of streptomycin, we were still following many of the methods employed over 100 years ago in the treatment of laryngeal tuberculosis. It was Albers who in 1829 advocated tracheotomy for rest of the larynx and Trousseau and Belloc who in 1837 advised steam inhalations. After that period, were added a few other adjuvants and modifications of technics which sought to be palliative but were seldom curative. General surgical measures were perfected in the last decade whereby the lungs could be put at rest, these measures having a relatively favorable influence on the laryngeal process. However, none of these measures showed the profound influence on the larynx as has streptomycin. In the same way, the treatment of laryngeal syphilis has been most favorably influenced by the addition of penicillin to our therapeutic armamentarium.

When one details progress, it is well that he be aware of the increasing influence of improved pedagogic methods in medical schools and the higher standards brought about by the establishment of specialty examining boards. Improved diagnostic methods together with the more general employment of laboratory facilities (radiology, biopsy and haematology) have played no small role in the proper evaluation and treatment of laryngeal disease. Laryngeal cinematophotography (**3**) has been developed in recent years to a high level of technical perfection and represents a significant advance in teaching as well as recording physiologic and pathologic responses of the larynx.

With this recent but evident progress in the management of organic disease, there has been the more general appreciation of the significance of laryngeal function in psychogenic disorders. It is hoped that the laryngologist who still abides by the erroneous concept that he effects a cure of laryngeal dysfunction by 'strong-arm' methods or even by suggestive-therapeutic measures has seen the light or will hide his face. The psychosomatic implications of vocal dysfunction must be recognized by the progressive laryngologist. In the past, there were comparatively few laryngologists who shared comparable interest in the field as did Flatau, Gutzmann (the elder), Panconzalli, Stein, and others. In but few instances did specialists in the field of logopedics find their proper place, that of working side by side with their medical counterparts in the colleges of medicine. The psychiatrist who is fully aware of the role the speech therapist plays in functional phonatory disturbance is also rare. By the establishment of a Division of Speech and Hearing Rehabilitation with full recognition by the appointment of a Professor in the Department of Otolaryngology, we feel that the College of Medicine, University of Illinois, has accepted the challenge of proving that this field is too closely allied to be separated from its clinical departments. Experience in the military phases in World War II taught us all that while educators and clinicians could go their separate ways, the greatest hope for progress was in the medical and non-medical counterparts to work together (**6**).

There are numerous examples of cases, besides those of a functional nature, where vocal rehabilitation can be effectively applied by such a cooperative approach. That this is feasible has not been universally accepted, however. The average surgeon forgets that the larynx has two essential physiologic functions, one of respiration and one of phonation. The latter is too frequently minimized by one who does not estimate the importance of such a vital communicative sense. The physician is only too often concerned with the need of eliminating the infection or the neoplasm. Many years ago, in discussing laryngeal

tuberculosis, we stressed the necessity for safe guarding and maintaining phonatory function and not merely to be concerned with relieving symptoms or achieving local subsidence of the specific process (**6**). Association of the laryngologist with the speech therapist will achieve maximum benefits in the management of direct or indirect injuries to the larynx or where the motility of a vocal cord has become impaired. In our experience with wartime laryngeal lesions we were profoundly aware of this fact and exploited our excellent rehabilitory facilities to the greatest benefit to our patients (**7**).

Trousseau and Belloc could not have foreseen the abuse of medical applications and instillations to the larynx that followed the 110 years of their introduction. Had they proposed only voice rest, the afflicted persons would have benefited much more. There is no thought in my mind that ulcerative processes properly approached (either by direct or indirect laryngoscopy) with a medicated applicator, cannot be aided in their healing. It is, however, the indiscriminate use of silver salts and various oily medications that have harmed laryngeal structures. If we could but develop in physicians the same high regard for the delicate laryngeal structures as we have inculcated into the minds of the rhinologist toward the mucosal lining of the nose, we would have achieved a high point in laryngeal progress.

If a patient has a pyogenic infection, he can today expect excellent results with antibiotics (parenterally and by aerosol inhalations), vocal rest, general supportive measures and bedrest in an environment of warmth and moisture. The control of his cough can be influenced by appropriate drugs and the remaining portions of his upper respiratory tract can be treated, especially when the laryngeal infection is secondary to a diseased process in the pharynx, nose or sinuses.

III

For a great many years we have tried to make the public 'hoarseness conscious.' The importance of early diagnosis has been drilled into the student, the specialist and layman alike. One of the most intriguing studies in medicine is the differentiation of disease entities which have a similarity of symptoms. Hoarseness is one of those symptoms. The causes which bring about such a symptom are numerous and should be known, not alone to the laryngologist, to the general physician but to the speech therapist who must be aware of the importance of voice changes and to the layman who must be made to realize that this symptom is a danger signal of the larynx.

There are numerous anomalies of the larynx which are manifest at birth. As man progresses through life there is perhaps no organ, by virtue of its position and function, which is subject to greater mistreatment or abuse. Diseases of the upper and lower respiratory tract, vocal abuse, external irritants and diseases of the surroundings of the larynx, are largely responsible for the many abnormal manifestations. A careful history and the laryngeal mirror must replace the guesswork which is so commonly employed in the evaluation of this symptom. It is too often assumed that hoarseness is merely due to an irritant source and a regimen of voice rest and steam inhalations will clear up the condition. The complaint is so important that even the most experienced laryngologist cannot afford any short cuts but must always insist upon:

1. Complete case history.
2. Indirect laryngoscopy.
3. General physical examination particularly of the upper respiratory tract.
4. Roentgenologic studies, including the nasal sinuses, chest and neck (larynx).
5. Blood examination, both mic-

roscopic and serologic.

6. Examination of the sputum.
7. Direct laryngoscopy or esophagoscopy.
8. Biopsy for microscopic study.
9. Psychiatric evaluation.

It is only by close application to the foregoing specifications that we can differentiate those conditions capable of producing alterations in the intensity, pitch and quality of the voice. They may vary from a simple nonspecific laryngitis, to a paralysis or a neoplastic manifestation. With regard to the paralysis, we must be aware of organic as well as of functional motility-disturbances and that neoplasms may either be benign or malignant. In a purely didactic approach to the cause of laryngeal change, there is a tendency to enumerate points in favor of each condition with reckless abandon. It is only by careful elimination of all possibilities that an absolute diagnosis is arrived at. In laryngeal differentiation it is well to bear in mind the words of Oliver Wendell Holmes, who said 'Keep your doubts to yourself, and give the patient the benefit of your decision.'

Organic paralyses of the larynx fall into four clinical groups: neuropathic, encephalopathic, myopathic and a combined form of myopathic and neuropathic types. When the paralysis is neurogenic in origin, there is absence of a local pathologic change. The myogenic form is characterized by the presence of some local lesion, such as swelling, tumor or ulceration. A great deal of evidence has been presented to support Semon's 'law' (that the abductor muscles — cricoarytenoid — of the larynx show a greater proclivity to motor impairment than the adductors— thyroarytenoid, lateral cricoarytenoid, interarytenoid, transverse and oblique). Some laryngologists, however, believe that there are other mechanisms involved, undoubtedly other nerves or muscles keep the vocal cord or cords adducted despite the destruction of the major nerve supply (recurrent laryngeal).

In unilateral paralysis, a speech therapist's cooperation is of great value to aid the patient in obtaining maximum results during the time that the healthy cord crosses the midline as an attempt of the physiologic sensibility of the larynx to compensate for the immobile cord. In recent years, progress has been made by external surgical means, to relieve the patient of respiratory embarrassment in cases of bilateral paralysis. Such procedures immobilize and draw aside an arytenoid, thereby permitting a small but functional airway without, however, influencing too adversely the phonatory responses (4).

Important strides may be recorded for the management of neoplasms of the larynx. In the past, the disciplines of direct laryngoscopy were confined to the few who practiced the art as a specialty. Now, the majority of otolaryngologists have acquired the knowledge and skill for doing this work and are seeing to it that their hospitals have been especially equipped. Laryngoscopic procedures form an important part of every post-graduate curriculum in the specialty.

The importance of conclusive biopsy study has been the result of improved laryngoscopic technics. No longer is guesswork a permissible adjunct in diagnosis. Common benign tumors of the larynx are papillomas, fibromas, mucus, polyps, cysts, vocal nodules, myxofibromas and angiofibromas. Syphilis and tuberculosis may produce growths of protean types. Therefore, the clinician routinely uses laboratory examinations that are designed to rule these out. He must always bear in mind, however, the possibility of the simultaneous existence of a neoplasm and a specific disease. The laryngologist is also aware of the results of an inadequate biopsy, for when not studied in depth, the true nature of a neoplasm may not be correctly determined.

All through the decades of past progress, we have been confronted by the spectre of inoperable carcinoma of the

larynx.[1] Since this condition is usually painless and not accompanied by unusual respiratory embarrassment until it has obstructed the lumen, patients fail to seek medical aid at a favorable time. It is astonishing that only 5% of patients coming to our dispensary are considered to be operable. Irradiation has thus far affected only a small percentage of this group. It is hoped that with 'cancer' becoming a byword, the lay public will seek aid at the first sign of voice change which cannot be explained on the basis of a simple laryngitis. The indictment involves the medical practitioner, the specialist not excluded. It is alarming to find that variations of interpretation of laryngeal pathology may be as numerous as the laryngologists who have occasion to see the same larynx. The reason for this is not altogether clear, even allowing for human error. Dependence upon the direct laryngoscopic view may have something to do with this problem. Sadly, however, it has led to loss of valuable time in the recognition of early malignant lesions of the larynx. The exercise of more skill and patience is probably the answer. Only in this way will the prophesy of Czermak be fulfilled: 'The laryngeal mirror will be the director, the real leader of the hand of the surgeon.' He held it to be desirable, emphatically essential, that the practicing physician be able to utilize the laryngeal mirror as precisely as the stethoscope (**13**).

While an intensive search for the cause of laryngeal cancer proceeds, with the knowledge that no race, no sex and no age are immune, the laryngologist has advanced his technics considerably since 1857, when the first complete extirpation of the larynx was performed. Early recognition of cancer in a patient with hoarseness which is pronounced, persistent and progressive has led to improved statistics. When a lesion involves the vocal edge of the true cord, this portion being of a squamous character, the tumor tends to be less invasive and is termed intrinsic. The epithelium in other portions of the larynx, such as, the ventricle, false cord and subglottic area, is respiratory in type. Characteristically the neoplastic formation in these sites is invasive and histologically has a rosette and garland formation, termed cylindric-cell carcinoma. It is apparent that the biopsy study may provide information of diagnostic, prognostic and therapeutic importance.

Careful studies of operative risks, improved methods of analgesia and anesthesia, development of newer more precise surgical technics and instrumentarium, and the discovery of chemotherapeutic agents have all contributed to the reduction of operative hazards. The former pre- and postoperative treatment has given way to a more certain management based upon modern advances in physiology and biochemistry. These advances have found expression in improved statistics in laryngofissure and in laryngectomy.

Voice deprivation always enters into consideration in operative procedures on the larynx, particularly when total extirpation of the larynx is contemplated. Proper management of the laryngectomized patient must of necessity include preoperative referral to the speech therapist for continous cooperative planning. It should be recognized that while cancer of the larynx threatens the life of the individual, the loss of this organ with its attendant obliteration of the speech function imposes a serious adjustive psycho-social

[1]Recent studies by J. G. Schoolman, of my department, reveal that:

1. Chronic laryngitis in more than half its incidence (55.82%) is due to malignant disease and even some of the benign lesions (44.18%) occurring are suspect for eventual malignant change.
2. Only 15.67% of individuals diagnosed as having cancer of the larynx can be expected to survive five or more years, due mainly to the fact that the greater proportion of patients have advanced cancer.
3. In 42% of cases, patient procrastination was accountable for delay in diagnosis and 25% were due to medical mismanagement.

crisis, the full significance of which becomes apparent only by proper evaluation of the primacy of social communication. In a recent discussion, Baker (**1**), proposed the 'the satisfactory solution of the train of intellectual, emotional, and vocational problems initiated by laryngeal surgery requires a tripartite re-educational approach:

1. Rehabilitation should be begun before, not after, surgery has intervened.

2. The technics of esophageal speech or the proper use of a pneumatic or electronic speech-aid, must be taught systematically and be varied in terms of the intellectual, emotional and experiential endowments of the patient.

3. The rehabilitation is neither adequate nor complete unless new attitudes toward self, the disability, and the social environment are structured, and general non-speech adjustment skills are developed.

IV

From the foregoing remarks it is apparent that the ultimate progress in laryngology depends upon the training given to the laryngologist and the speech pathologist and the education of the layman. While prevention is considered paramount, the personal discipline on the part of the populace will never be properly achieved, even with the most enthusiastic educational campaigns. It is apparent that there is a need to inventory the patient as a *total person*. This embodies a careful history, a complete examination, and a competent analysis of the social, psychologic and economic evaluation of the individual. Only in this manner, can the physician be in a position to adequately prevent, alleviate, cure or rehabilitate his patient. Moreover, rational therapy, whether medical or surgical, is based upon the premise of an inventory of the total person. Vigilance on the part of the clinician must be the goal. Vocal abuse and the present day prevalence of smoking, may some day be replaced by other factors which seem to grow out of man's so-called 'civilized' environment. Only by the continuous education of all groups interested in laryngeal function will progress be steadily pushed forward.

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LETTERS TO THE EDITOR

Part of a recent article by Palmer[1] is summarized in the following way: 'A historical note is given relative to the credit which should be accorded generally to Professor J. H. Muyskens for calling the attention of the professional world to the importance of chewing, sucking and swallowing in speech disorders.'

Since I have considered myself responsible for the introduction of the chewing method into logopedics—and, by the way, for developing the theory that human speech originated in loud chewing—I would have to accuse myself for neglecting Muyskens' priority. But in the list of references in Palmer's article, Muyskens' publication is quoted as 'accepted for publication in *Vox*, Vol. 2, 1927.' As far as I am informed, it has never been published.

If one, as it should be, refers in a scientific paper to the literature, he either agrees or disagrees with the papers referred to. That can be done only, of course, if the papers have been published. If that did not happen, the ideas contained in a manuscript are lost for the scientific public—unless the author lectured on them. I do not know whether Professor Muyskens lectured about his ideas concerning the relationship between chewing and talking, but nothing of that kind ever came to my notice. Therefore, even now, should I write again on the chewing method (and theory) I would not know in what way to refer to Muyskens' ideas—because they are unknown to me. From the viewpoint of scientific priority, I still maintain that I was the first to introduce chewing into logopedics. —EMIL FROESCHELS

In the introductory portion of my article[2] I had written: 'However, we Indians with our characteristic indifference towards worldy woes and evils, have rather taken it (stammering) "philosophically," not considering it worthwhile to give even a little attention to it.' Now, this sentence indicates the mental state of an average stammerer, or rather of an average Indian, before we achieved our independence on the historic day of August 15, 1947. More than one year has passed since I sent this article to your office. During this period much water has flown in the river Ganges, the clock has moved very fast in India. What I mean is that today we Indians are no more indifferent towards wordly woes and evils.

As a free, responsible citizen I must never cherish cheap publicity at the cost of even the slightest insult to the fair name of my motherland. You, a free man yourself, will agree with me in this contention, and, in fairness to me, will publish this letter (or its relevant parts) in the subsequent issue of your *Journal*. I will be very greatly obliged to you for this favor conferred on me. —SATYA NARAYAN PUROHIT

[1] *Journal of Speech Disorders*, 1947, **12**, 415-418: Studies in clinical techniques: II. Normalization of chewing, sucking and swallowing reflexes in cerebral palsy: A home program. By Martin F. Palmer.

[2] *Journal of Speech Disorders*, 1947, **12**, 419-420. Why stammerers suffer. By Satya Narayan Purohit.

JOURNAL OF SPEECH AND HEARING DISORDERS, 1948, **13**, 19-22

Leopold Treitel On Stuttering

Morris Val Jones*

In my study of German I ran across an article written in 1894 by Dr. Leopold Treitel, a Berlin physician, in which he discusses the nature and phenomenology of stuttering. Since his article contains some of the present-day theories concerning this much discussed condition, a translation of part of it might prove of interest to speech correctionists. He writes:

Stuttering is a nervous illness, characterized by tonic or clonic spasms of certain groups of the speech muscles. These contractions can affect also the musculature of the larynx, palate, tongue and breathing mechanism—either singly or in groups. The spasms may extend themselves to other muscles of the neck or face, causing grimaces which occasionally, though with error, provoke the onlooker to laugh. These movements are only 'with-movements,' as gestures while speaking. These 'with-movements' often extend themselves to the arms, as a rule on the right, and to the legs. Gutzmann tells of the case of a man who before each attempt to speak first bent together and then sprang forward in order to bring forth finally a word; he was proclaimed deranged and brought to an asylum, where Herr Professor Westphal recognized his illness as stuttering.

Separately the phonatory spasms present very different pictures. Spasms of the breathing area may occur during inhalation as well as in exhalation. Before or in the middle of a word the stutterer must suddenly grasp for breath even though his supply of air is not exhausted or even diminished. These inhalations, which are caused by spasms of the diaphragm—Coen believed—enable the stutterer to take care of a defective air pressure. However, I have refuted this contention by my spirometrical examinations. These same spasms may occur during exhalation; they come suddenly and jerkingly at the beginning or in the middle of speech. It seems to me that exhalation spasms are more frequent than inhalation spasms. During the exhalation spasms no sound can be produced; during inhalation spasms sound is possible, but most stutterers feel more like vomiting. As Ssikorski reports, in both cases one can hear an 'h' at the end of most tonic spasms so that, for example the word 'Stottern' becomes 'Sth-ottern' and the word 'Tadel,' becomes 'Tah-ha-ha-hadel.' In severe cases inhalation and exhalation spasms appear alternately.

The musculature of the larynx is affected, as well as the breathing mechanism. Usually the closing mechanism is involved, rather than the opening mechanism, and, as a rule, the picture changes according to whether the muscles are in tonic or clonic spasm. During a tonic spasm (if the vocal bands are closed before the attempt to speak) it is either impossible to phonate, or the vowel is prolonged abnormally. During the clonic spasm, the voice is uncertain (bleats). The inability to produce a sound has mislead several authors to look upon this as a special illness and call it by a particular name (spasmus glottidis phonatorius, dysphonia spastica); these cases are, however, nothing more than a special form of stuttering. If

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the front neck musculature is affected, then the head drops and the mouth is open, making a very comic sight.

During tonic spasms of the intrinsic speech musculature, the consonant is held a long time; during clonic spasms, it is often repeated, as, for example, 'P---apa,' or 'P-p-p-p-p-p-papa.' The spasms appear mainly during loud speaking and reading, less during whispering and seldom during singing. They are absent also as a rule if the patient speaks alone or within a circle of friends. On the other hand, they can appear, for example, while telephoning. They tend to be strongest if the stutterer finds himself for the first time with a strange person, especially one who stands higher.

Research proves that there are psychic influences which produce speech spasms. Denhardt calls the illness a 'psychose.' Other skills—such as piano playing, playing a violin, writing, and even walking—can be affected by psychic influences. The stutterer, with rare exceptions, is affected by an anxiety feeling in the pit of the stomach. Young children, however, tend to know nothing of this feeling. Of 180 children between the ages of 3 to 6 years, 24 (or 13%) spoke with interruptions accompanied by spasms in the speech musculature. I believe I can show that these blocks resulted because part of the children speak faster than the awkward speech organs can follow, especially if there is difficulty in the pronunciation of sounds, or articulatory defects; part of the children begin to speak before they know what to say. It is also characteristic of this speech blocking that the children are somewhat delayed for their age in the formation of unusual or difficult speech sounds and they repeat familiar consonants—for example, *m, n, b, f,* etc. With few exceptions, these children are not stutterers, but they can become stutterers. Although interruptions of speech and quivering of the speech musculature occasionally occur in children, with the stutterer they are accompanied by an imagining—not always passing into consciousness—of the necessity of saying certain sounds. How does this imagining develop? Among the several causes are a nervous basis and particular circumstances.

The nervousness is almost without exception inherited; rarely is it produced by a weakening illness. It is false to regard deformity of the speech organs as a predisposing cause; they can produce articulatory defects but not stuttering. If the stuttering stops after the removal of growths in the nasal pharynx, this is to be traced to psychological influence of the operation.

As far as the inheritance of stuttering is concerned Gutzmann ascribes it no great role; and I can, so far as my research justifies, not ascribe it as great importance as Ssikorski and Denhardt have done. Ssikorski found among 359 stutterers that 31% were familial stutterers; Denhardt's figures are even higher as he declares to have found among 1,994 stutterers 1,545 cases traceable to heredity, that is 77½%. Coen has been able to establish among 335, hereditary influences in only 36—that is, 11%. Heredity does play a certain role in the onset of stuttering. In many cases these children first become conscious of their errors when they begin attendance at school. In other cases, the parents themselves have made the child conscious of the error and through threats or stern treatment produced in him that timidity which further completes the picture of the stutterer.

Stuttering may grow out of an illness. Herr Professor Mendel tells of the 15 year old Gustav B, who spoke faultlessly at the beginning of his nervous illness, Freidrich's disease. As the disease progressed, the speech became more and more difficult. At the time of my examination, he showed obvious signs of embarrassment; while speaking he blushed, lowered his eyes, and looked elsewhere. He experienced anxiety while talking with strangers, more so than while speaking with persons whom he knew. 'With-movements' were very pronounced, con-

sisting partly of spasmodic quivering of the face, of the neck and of the right arm, and partly of quivering of the lips during and after the speech. The pronunciation of a single sound—especially the lip sounds, *b, p, f, m,*—at the beginning of a sentence became extremely difficult. He delayed on them a long time while he pressed the lips tightly together; meanwhile, the beginning consonant was repeated. The same elongation was true with vowels. He was nevertheless capable of pronouncing all sounds correctly, except the ones which seemed to him especially difficult. He spoke more easily if one pronounced for him. His brother, who was three years older and had the same illness, spoke strikingly slower, chopped the syllables off, and prolonged the beginning consonants longer than usual; but he spoke without anxiety and did not show symptoms of embarrassment, although he made use of some 'with-movements' while speaking.

The first case shows how stuttering can develop on the basis of an organic illness. The older brother had almost the same speech defect as the younger, but he did not become a stutterer; that is, he lacked the anxiety feeling which leads to the resulting speech disorder. This may have been because he was older and already more calm or because he was less easily excitable. Thus we see how stuttering may develop in children; namely, if it is weighted with an hereditary nervousness. The speech defect produces the anxiety, and the anxiety produces again the speech defect; thus a fatal vicious cycle develops for the stutterer. Later, the anxiety feeling produces the most conspicuous symptoms, as in many illnesses of symptom still endures a long time after the origin has disappeared; for example, the running of the ears after scarlet fever. One must not, however, as Schrank has done, present the anxiety as the causative factor.

In most cases the difficulties of stutterers begin before attendance at school. At school, imitation, or psychic contamination, plays, without a doubt, a great role in its increase. Children imitate everything much more easily than adults, and therefore learn simply whatever is taught them at school. But they learn the bad as well as the good; in fact, the former ever more easily than the latter. Even the younger children show this tendency to imitate; they cry as soon as a strange child cries. One can also observe this involuntary imitation with adults; for example, when somebody starts coughing at a concert, many follow him. Still more obvious is psychic contamination in the case of nervous people; for example, when a hysterical girl has a convulsive attack, other women with similar dispositions in the same ward have attacks. However, stuttering through imitation is certainly not as frequent as Gutzmann assumes. As a result of statistics made on the suggestion of Denhardt, it was found that 5,408 or 87.14% of 6,206 stuttering children were burdened with their illness before they started to school. More numerous are cases of imitation between parents and children. That the playing together of two children can be responsible for the onset of stuttering, the folowing case indicates: Rosalie G., ten years old, daughter of a business man, is not tainted by heredity. She is the youngest of four sisters, of whom none stutters. Her physical and mental development was normal; she proved in her bearing no abnormality; she got along well in school. In the fifth year of life she played for a long time together with a stuttering boy. Although she had spoken well until then, she soon began to stutter. The father believed sternness would set her free from the illness, but it become worse; as a result the girl stutters more at home than with strangers. The form of the stuttering is a tonic spasmodic one.

With error, defective endowment was taken for granted as the cause of stuttering; on the contrary, the stutterers are on the average more endowed than others, even though many times through their involuntary silence

they give an impression of stupidity. One must be cautious in accepting the influence of known circumstances, which for the stutterer may be important. The personal information of the stutterers is often not entirely sound, because they may begin with an assumption and then await its confirmation as a fact. Such circumstancial influences may be the days and seasons, temperature variations, and even changes of the moon. Many circumstances may, however, affect indirectly the intensity of the stuttering; for example, climate or locality changes may influence the frame of mind of the stutterer; and in this condition he stutters somewhat less.

Gutzmann ascribes an exaggerated influence to second teething and puberty upon the onset of stuttering. There are very few cases in which one can trace the onset of stuttering directly to second teething. Stuttering, which develops at puberty, is not stuttering at all but hysterical speech interruptions. What frequently happens is that an earliest occurrence reappears or is reinforced. The great psychical sensitivity of the time of puberty develops in the individual a conscious shyness of the feminine sex, which makes his voice uncertain, and his heart beat harder. The same thing may happen when he speaks to strangers. For example, Schulthess reports of himself that in his 15th year he stuttered for a certain time, but only if the word began with a 'd'; after a few months the evil stopped of itself. One must also take into consideration that during this time examinations fall or the apprentice period begins. It would be, therefore, often questionable whether these happenings or puberty is guilty of the onset of stuttering. Moreover, stuttering decreases after puberty. The calm and self-possession of maturity give the psychic influences less importance than the impressionable spirit of adolescence. The dimunition with age is to be assumed a proof of the psychic nature of these troubles. Even though it is not authoritative, the following table presented by Denhardt is very clear. Of the cases which he handled, the stutterers stand:

Age 6-8	49
9-12	323
13-15	336
16-20	631
21-25	549
26-30	207
31-40	133
41-50	48
51-60	14
62	1

These figures are not conclusive as they give only the ages of cases which Denhardt has handled, and not the ages of stutterers in the average; but they are doubtless to proportion. I have, for example, had more children than adults in my practice. The oldest stutterer, who entrusted himself to me, was 68 years old.

Stuttering may be caused by an injury—such as a fall, blow or concussion—or a violent fright. Even in cases of injury, fright may have significance for the onset of stuttering. But one may, as Coen has done, overrate the significance of these occasional causes. One must not always take the reports of parents in these cases for ready cash. Many times they assign one of those events as the cause, but upon closer examination most of them state that the stuttering was present since an earlier age. One must certainly establish whether the stuttering began after as infectious disease, such as measles, diphtheria, scarlet fever, typhus, or influenza.

Speech disorders are found more among the masculine than the feminine sex. One cannot trace these distinctions to physical differences, as Gutzmann has done. The distinction is more likely psychological. As we cannot make clear why girls on the average speak earlier than boys, so we cannot make clear why stuttering is less frequent among girls. While Coen found only 10% of the feminine sex among the stutterers, Denhardt found among 820,000 children that the proportion was approximately one girl to 2.5 boys. Similar results are reported by Gutzmann.

JOURNAL OF SPEECH AND HEARING DISORDERS, 1948, **13**, 23-30

Twenty-five Years of Cleft Palate Prosthesis

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THE REVIVING interest of the speech pathologist and the speech clinician in the rehabilitation of children and adults who suffer cleft palate and cleft lip, impels an earnest examination of fundamental concepts and practices in this field. Onachilla's (4) excellent study of the history of the non-surgical treatment for palatal deformities makes it clear that, inasmuch as surgery and dentistry did not become separate specialties until about 1839, the progress of clinical management can best be evaluated in the light of the concurrency of their clinical events. The study of the collateral development of the specialties of surgery and dentistry that followed provides a strong stimulus to an attempt to give a logical explanation of the present dominance of surgery and the deemphasis of the treatment of palatal deformities by means of prosthesis.

It is not the purpose of this paper, however, to review the history of cleft palate prosthesis. It addresses itself rather to the task of examining the major problems that are related to the application of the prosthetic method to the complete restitution of the cleft palate patient and evaluating its results. As clinicians, we are obligated to examine thoughtfully and tolerantly some very important clinical questions that this technological advance has presented.

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I

The evaluative and descriptive literature in the field of cleft palate surgery is impressive in its quantity and seriousness. It may be that this volume of literature, together with the social and scientific ascendance of surgery, has tended to obscure the important contributions that prosthesis can and does make to the restitution of the cleft palate sufferer. The drama that is usually associated with surgery, as distinguished from the simpler and less impressive methods of prosthesis, has no less been a factor in the disproportionate attention it has received. Hence it demands considerable scientific temerity to support the recognition and place of prosthesis in cleft palate in the face of the very general conviction that surgery excludes the admission of any other method. It is encumbent upon the clinician however, to interpret any methodology in terms of the larger good of the patient. This consideration of the patient directs our attention to an examination of such questions as those that follow:

1. Is prosthesis generally applicable or, if not, to what types of cleft palate is it adapted?

2. Of what significance are the considerations of the age and condition of the patient?

3. Is prosthesis a substitute for surgery and in this sense a second choice?

4. What influence do the choice of materials, type and style, of the prosthetic speech aid have upon its utility?

5. What are the relations of pros-

thesis to general dentistry, orthodontia, speech, upper respiratory health, and audition?

6. What does prosthesis contribute to solving the problem created by surgical failure?

7. What advancements have been made in the technics of the construction of cleft palate speech aids.

8. What are the practical implications for prosthesis in our newer knowledges of growth and development of the face and head and of the speech function itself?

9. What are the economic features of rehabilitation through prosthesis?

All of these questions cannot be fully answered within the scope of this paper. Yet it is appropriate at this point, to estimate briefly and with greatest possible objectivity the present status of surgery in the treatment of cleft palate. It is not a simple matter to set up wholly adequate criteria to judge the success or failure of *any* surgical procedure that may intervene for this deformity. This type of surgery requires, first of all, consummate skill. It demands, though it does not always have the benefit of, a thorough understanding of the ostiology, myology, and neurology of the mouth, pharynx, and the nose. The surgeon presuming to operate upon these patients must also be willing to develop more than average insight into the physiology of speech production. There are many characteristics of the mouth which make it a discouraging operative field.

It is now well known that cleft palate may have a number of concomitant structural variants attending it. Observations made by Dorrance (2) and others over the past thirty years strongly suggest that at least in part the mortality in cleft palate surgery is due not to surgery itself or its traumatic sequela but rather to the presence of cardiac, visceral, respiratory, and other defects.

Further, successful cleft palate surgery presumes much more than merely the restoration of parts to their reasonably normal location. Rather, it contemplates the achievement of such restoration within the limits of improved function. This criterion of improved function is much more difficult to fulfill than is the mere tissue reorganization which the layman so commonly seeks and gratefully accepts.

Since cleft palate is very often complicated by deformities of the nose and other structures adjacent to the oral cavity the surgeon is expected to attain a quality of cosmetic results on the face that are not usually expected on less visible parts of the body. It is demanded that the surgeon control the incidental disturbance to surrounding tissue while he corrects the palatal and velar deformity. The emphasis that the orthodontist places upon proper maxillo-mandibular relations in these cases underscores this criterion. Nor has the otolaryngologist been silent in his convictions that any surgery performed upon the roof of the mouth is by the same token surgery of the floor of the nose and any manipulation of the muscles of the pharynx affects in a very direct way the physiology of eustachian ventilation.

This review of the criteria in which successful surgery must be judged might well be discouraging were one not able to report that, viewed from broader aspects, more surgery of competence has been done in the last twenty-five or thirty-five years than has ever been done before in the history of cleft palate treatment. However, the prosthodontist and the speech clinician are likely to take a more conservative view of these surgical gains and advances since circumstances seem to dictate that large numbers of persons suffering from cleft palate and who have had disastrous surgical failures seek their aid. A more careful statistical study of the cases that are met by the prosthodontist and speech clinician might well provide evidence that a disproportionate num-

ber of persons who have experienced surgical failures come to them for help. On the other hand it may be that many more cases than we know who have benefited by excellent surgery with good functional outcome may feel that they do not require the assistance of a trained speech clinician or the prosthodontist.

As to whether there is more failure in cleft palate surgery than in other comparable branches of surgery is difficult to state with our present knowledges. Yet here the admission of the testimony of the major cleft palate surgeons may be of some help. It is not uncommon that cleft palate surgeons of competence reflect their discontent and dissatisfaction with the present level of surgical achievement in this area. Some of the more distinguished members of the surgical profession on the basis of their long experiences, have recommended with increasing frequency that a more conservative view of the applicability of surgery in cleft palate must be taken. Such an attitude they are insisting, includes the admission of other specialties which until recently have been adjunctive and not in any sense considered to be primary or even equivalent methods. General dentistry and prosthodontia is one of these methods. It is apparent therefore, that the speech clinician and the prosthodontist are not alone in their conviction that a truly satisfactory and comprehensive program of restitution for cleft palate patients demands a more inclusive view and does not lie peculiarly within the realm of the surgeon alone. It should be emphasized that this attitude is supported by many of the best and most conscientious American and European surgeons.

II

Where, then, does prosthodontia stand today as a specialty in relation to a satisfactory solution of this urgent human problem? We should concede that prosthodontia has made one of its most important contributions in the last twenty-five years, in the great help it has provided for the tragic and discouraging surgical failures. Yet it should not be counted as a misfortune that prosthodontia has been asked to solve the complex problem presented by the mouth and throat that have originally been deformed by nature and then, through an accident of circumstances, is left in a state which in many ways appears worse than the first. To solve the problem of rehabilitating such a mouth though it may have been discouraging, has at the same time provided an important stimulus to imagination, ingenuity, and technical skill. We can understand, then, why the prosthodontist has been inclined to evaluate surgery in a somewhat different light. He insists that anyone recommending surgery should do so with full sense of the critical fact that surgery is *so final because it is irreversible.*

In meeting the speech and biological needs of the patient having had an unfortunate surgical experience, the prosthodontist has been challenged, but he has also been given a healing assignment which is vastly more complex than many realized. Generally, these mouths are characterized by profound disarrangement of the teeth in the maxillary arch. The teeth are often so extensively displaced as to lie completely outside the area of any possible occlusion with the lower arch. Such mouths often present absent or unstable pre-maxillary bones, large sub-labial perforations or adhesions, scattered perforations of varying size along the midline of the palatal vault, complete absence or great inadequacy of a velum which may either remain divided, or if its union has been achieved, it has produced improper muscle relationships and has been done at the expense of length, often making it so taut as to be completely immovable. In some instances the body

of the palato-pharyngeous and glosso-pharyngeous muscles are greatly scarred, damaged, out of position or restricted in movement. In those cases where pharyngeoplasty has been undertaken and has failed, the upper segments of the superior constrictor may also be greatly interferred with in their movements.

III

Great advances have been made in the speech aids that are constructed for the functional improvement of these cases. By carefully adapted anterior segments carrying artificial teeth, the incisive dental margins can be restored and the collapsed facial profile assisted to become reasonably normal. By employing the remaining teeth as anchorage even though disordered and out of place a wholly new functional upper arch may be created to establish satisfactory occlusive relation with the mandible. The perforations in the palatine vault can be closed, and by skillful management both in the size and direction of the posterior portion of the appliance, a means can be found to assist the residual pharyngeal muscles to achieve a satisfactory nasopharyngeal closure for speech.

The accomplishment of these ends has been greatly aided in the past twenty-five years by the development of new materials. The development of the science of prosthesis has always been sharply conditioned and limited by the technological advances in the fields of chemistry, metalurgy, ceramics, engineering, and laboratory craftsmanship. The history of cleft palate prosthesis, and all of dental prosthesis for that matter, reflects its dependence upon these scientific and technical areas for its adequate expression. There have been, as the history attests, many occasions when the prosthodontist conceived clearly what form prosthesis sould take, the character of its adaptation to living tissue, and what the objectives of its function were, but science had not yet been able to produce materials that were fully acceptable and through which these ideas could be translated into clinical realities.

It is little more than twenty-five years ago that Stryker (**5**) produced the first practical denture employing a phenol-formaldehyde resin. It cannot be claimed that modern cleft palate prosthesis begins with the development and application of synthetic resins in dentistry, but it remains that the advent of these substances provided new and important impetus to the construction of appliances that were designed to assist in the restoration of the speech function, as well as the restoration of lost or deformed anatomical structure. The still common intelligent use of the metallic alloys for the construction of cleft palate appliances cannot be ignored, but it can be said with certainty that as far as cleft palate prosthesis is concerned the application of the synthetic resins to the construction of appliances is a landmark of inportance equal to Delabarre's (**1**) first use of soft rubber as a suitable material for artificial vela.

Because of their lightness, the ease with which they can be processed, their excellent adaptability to soft tissue, their hygienic qualities, the plastic substances have found very general use in the field of prosthodontia for cleft palate. Where an extensive prosthesis must be created the element of lightness provides a very great advantage over the metallic substances. There are, to be sure, occasional prosthodontists in this country who argue that the metals, particularly gold, are the most satisfactory materials for these appliances, but the acrylic materials are becoming increasingly popular for the purpose.

From the standpoint of the speech correctionist it must be admitted that these extensive prosthetic speech aids designed for such grossly abnormal postoperative mouths do not necessarily assure the satisfactory recovery of the speech function. This can scarcely be expected. It cannot be

hoped for because the fundamental principle upon which a speech aid rests has often been nullified by surgery in such a mouth. This principle has in recent years become very sharply defined. Though a variety of speech aids are being constructed for patients in this country and in Europe there is increasing agreement among those most successful in this field that, first of all, a speech appliance is not, essentially, an obturator. Though, of course, satisfactory obturation of palatal perforations is one of the goals of a cleft palate appliance *it is by no means the primary or even essential one.* The attention of the prosthodontist has gradually shifted to the posterior parts of the oral chamber. Modern prosthodontia has also been greatly stimulated by the recent research into the physiology of the naso-pharyngeal closure mechanism.

Olinger (**3**) and one or two others have continued to design their appliances so as to provide a movable velum upon the fixed palatal section. Our present improved knowledge of the normal muscle movement of the pharynx and of the effect on non-congenital unions on its kinesiology, make it difficult to accept the principle of the movable velum. There is apparent in prosthodontia a general tendency no longer to attempt to mirror nature in the construction of appliances. Rather it has moved in the direction of attempting to face realistically the fact that a speech aid is not so much an instrument to restore lost parts as it is to create a condition whereby the residual tissues may perform functions by compensation, or by the approximation of normal movements of speech production.

The fixed bulb-type of instrument is now generally conceded to be most satisfactory in most cases. It has the distinct advantage of being free from moving parts, being mechanically simpler, and in most technical hands easier to construct. It consists essentially of a palatal section which is retained by the teeth, or in edentulous cases, by the aveolar borders their surrounding tissues, and the margins of the cleft. This palatal section is made as light as possible. It is now often reinforced by gold, or by steel alloys. By an extension posteriorward the cleft in the velum is bridged and, on its most posterior aspect, this palatal extension bears a bulb that is adapted to the individual proportions of the naso-pharyngeal port of the patient. The contour of this palatal extension or carrier is made to conform to the presumed or actual natural contour of the soft palate.

The view has been advanced by the authors that the location or plane of the naso-pharyngeal bulb should be determined by the location of the greatest constriction in the lumen of the naso-pharyngeal port. Experience shows that a palatal extension carrying a bulb to this location requires less compensation of the collateral pharyngeal muscles than does one introduced at a lower point in the pharynx. On the other hand a bulb carried into the epipharynx at too high a point induces an undesirable denasality which cannot be overcome merely by the progessive reduction of the size of the bulb. This plan differs for each patient and can be determined best by direct peroral inspection as the patient executes the movements of the deglutition and phonation.

The size and shape of the bulb and the palatal extension are highly individualistic. This has discouraged the tendency to believe that speech aids can be produced by taking impressions in the dental chair and having them processed in a dental laboratory miles away from the patient. The advantages of the plastic bulb have become apparent for, as the patient's muscle fibers develop, the bulb may progressively be reduced in size. The use of the hollow metal bulb requires that the entire posterior section be recast, a technical demand that often discourages its prompt modification in terms of the speech needs of the patient.

It becomes evident therefore, that in cases of postoperative failures it is difficult to design an aid which meets these basic principles satisfactorily. Since these cases so frequently present a foreshortened and very tight soft palate, quite inadequate for improved speech, the positioning of the carrier extension must be greatly varied that it is frequently necessary to introduce the bulb into the pharynx at a point quite unsatisfactory for speech production.

Since a tight soft palate also very frequently alters the general porportionality of the epipharynx, the task of taking an adequate impression, designing a palatal extension, and carving a bulb of proper size and dimensions is made very difficult.

The senior author of this paper has found it both necessary and useful to redivide surgically such abnormally tight soft palates or remaining bridges of tissue that prevent the proper positioning of the bulb in the pharynx. Though this may appear to be an adventurous and even radical step by some, its value has been fully justified and such assisting surgery makes possible the construction of much more satisfactory speech aids in these difficult cases. This procedure is but one of several evidences that surgery and prosthesis may often be successfully combined.

Certainly the prosthodonist hopes that in cases of bilateral and unilateral complete cleft the obicularis oris and its overlying tissue will be restored satisfactorily. He expects that the divided aveolar border will be reunited or at least approximated, through a mechanical union, without the generalized destruction of dental germs by the injudicious routing of sutures through the tooth beds. He remains hopeful too, that the contour of the maxillary arch can be maintained so as to assure satisfactory occlusion. We are agreed that satisfactory retention of the aid and functional occlusion are two of the most important goals in any satisfactory oral prosthesis. This applies especially in the case of cleft palate.

The progress of prosthesis in its application to cleft palate has also been marked by intensive study of the complex problem of making satisfactory impressions of mouths with palatal perforations. The search for materials that are better adapted to this delicate procedure has been unending. We do not yet have the ideal impression material. It is difficult to avoid tissue displacement even with the present best materials and the task of taking impressions for the posterior sections of the appliance requires great skill and ingenuity. The application of the alginate substances for this purpose has been encouraging. Several approaches have been devised for taking these impressions in one or more sections. Wright (**6**) devises a specially constructed carrier tray to introduce the impression material to the proper position with what he thinks to be less tissue displacement. The senior author of this paper has not found it necessary to use a special type of tray but has modified the regular dental tray for this purpose.

The most impressive results that have been obtained in cases of cleft palate through prosthodontia have been those in which the cleft has been undisturbed by surgery. In such cases the aid can be designed for adaption to structures in their more usual position, and the natural movements of the remnants of the velum and of the surrounding musculature of the pharynx can be brought into the most effective functional relationship with the periphery of the bulb and of the carrier extension or tail piece. The prosthodontist can well be proud of the speech recovery achieved by these patients. In the surgically undisturbed case the full benefit of the prosthetic approach may be realized.

IV

Another evidence of the advance of prosthesis during the past twenty-five

years has been the encouraging use of the prosthetic method in young children. It has been demonstrated repeatedly that these speech aids can be placed in the mouth at a very early age. It can be employed successfully in children as soon as their deciduous dentition has erupted. By the placement of small orthodontic bands on the molar teeth, the speech aid can be retained and worn for speech training. A light plastic palatal section can first be placed in position and the palatal vault thus closed. Gradually posterior extensions can be added to this light palatal plate as tolerance develops. If delay of surgery has been deemed advisable, this makes possible a delay until the sixth year or later. Many small children are now wearing speech aids which are light, comfortable and which provide excellent protection for the delicate membranes of the nose and throat.

The problem of the gradual adjustment of the prosthesis to the growth patterns of the mouth seemed at first to be a large one. Experience has demonstrated however, that adjustments can be conveniently and rapidly made and that the adjustments can keep pace with the expanding growth gradients of the mouth and head.

The combination of prosthesis with orthodontia has been very encouraging. There is no reason why in the initial planning of the case, the orthodontic problems should not be taken into account and why the speech aid cannot include such special provisions for oral orthopaedics as the case may require.

V

Another important feature of the rehabilitation of cleft palate patients has been that of the determination of a proper service structure for these children and adults. It is the conviction of the dentists, the orthodontists, and the speech correctionists that a wholly satisfactory solution to the problem can be arrived at only if a workable scheme of cooperative specialization can occur. A number of clinics in this country have shown that by the combination of the services of the pediatrician, the surgeon, the prosthodontist, the orthodontist, the general dentist, the speech correctionist and the psychologist-educator, the total needs of the child can be evaluated and be served.

The pattern for the future is becoming clear. Not only must these children be examined and treated by the individuals whose services are required, but these examinations should be made *concurrently* with the opportunity for extensive interconsultation. It would be preferable if such consultation could occur under the same roof and within the frame of the same service structure.

Prosthodontists and the speech correctionists continue to envision the speech problem of the cleft palate patient in a long term pattern. They persist also in expecting that the total psycho-social needs of the child must be met. The social and vocational usefulness of such a coordinated program is very encouraging.

Clinical speech is also acquiring a clearer view of the nature of its problems in speech re-education of patients wearing speech aids. It is our conviction that the kind and extent of the muscle movement compensations that must be established for the successful use of a speech aid show very wide individual differences. Generally, however, it may be said that emphasis upon acquisition of a satisfactory oro-nasal acoustic balance is primary. The use of specialized muscle training to develop the residual musculature by voluntary exercises with a mirror is imperative. The use of the larger speech fractions, the syllable and the syllable group, rather than the individual speech sounds has been shown to pay larger dividends. Intensive auditory training is essential.

The dictum may well be repeated here that the establishment of satisfactory articulation habits in the cleft

palate patient will improve his speech to an extent greater than any other speech procedure.

Another question that is frequently raised is that of the comparative economics of prosthodontia and surgery. It is difficult to generalize, since a great deal of cleft palate surgery is done quite routinely on a completely charitable basis or for very minimal surgical fees as a part of state or local programs. Hence it is difficult to ascertain what the 'usual' surgical fee for such an operation is in various parts of the country. Because of the large amount of time in laboratory work required for the construction and design of a satisfactory speech appliance, it must be expected that prosthesis is not necessarily 'a cheaper way.' Time has shown that the use of certain materials and technics can keep the cost of cleft palate prosthesis well within the economic limits which enable us to provide all children and adults who require it with the best possible clinical care.

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BUT DON'T DEFINE *ALL* YOUR TERMS

The reader knows that many a discourse defines none of its terms and proves none of its statements; such a discourse, since it contains nothing with which a rational mind can agree or disagree—nothing, in other words, that such a mind can significantly affirm or deny—is as bad, logically, as a discourse can be; it may stir emotion but cannot communicate ideas, being only a crowd of words which, if spoken, are heard only as a kind of noise. The reader knows, too, that no discourse, not even the logically best, can define all of its terms or prove all of its statements, for he knows that to attempt either of these things would be stupidly to commit the unpardonable sin of circularity; he knows, moreover, that all of the defined terms of a discourse are there defined by means of its undefined terms, or variables; and he furthermore knows that all of the statements proved in a discourse are there proved by deducting them logically from its unproved statements. These familiar facts are elemental; from them there can be no escape for men or gods; they inhere in the essential nature of discourse, in the very frame and constitution of its intimate structure.

From *Mathematics as a Culture Clue* by Cassius J. Keyser. (Scripta Mathematica, 1947.) Page 7.

JOURNAL OF SPEECH AND HEARING DISORDERS, 1948, **13**, 31-34

Infant Speech: Development of Vowel Sounds

Orvis C. Irwin*

IN TWO unpublished studies (**1, 5**) preliminary analyses were made of the probable course of the mastery of vowel sounds by infants. The purposes of the present report are to indicate the complete course of development of each vowel sound by two month intervals from birth to two and a half years, to illustrate this developmental process by means of profiles (**2**), and to plot curves of the development of the three vowel classes, namely, front, middle and back vowels. A description of the sample of infants, the methods of collecting phonetic data on infants, and the reliability of the data may be found elsewhere (**3, 4**).

The analysis of the vowel sound data in this article will be presented in terms of percentages rather than in terms of the mean number of occurrences of the individual sounds. Vowel percentages are given in Table 1. The fifteen two-month age levels are listed in the first column of the table. The second column indicates the number of subjects from whom data were collected at each age level. The remaining columns give the proportion of the total for each of the vowel sounds at each age level. The table should be read as follows: for the first age level, the number of infants is 62, the proportion of the total vowel usage at this age for the vowel [i] is 0.14%, of the vowel [ɪ] it is 27.39%, and for the sound [u] it is 0.31%. Likewise, for the fifteenth age level, the percentage of occurrences of the vowel [i] is 13.44, while the percentage of occurrences for the sound [u] is 4.19. The percentage of occurrence for each vowel sound for each age level throughout the first two and one-half years of life may be located in this table. It will be noted that there are several blank spaces. This means either that the sound does not occur, or that it occurs so infrequently as not to be worth inclusion. For comparative purposes, percentages of adult vowel usage based on Voelker's (**6**) data have been included in the table.

Profiles (**2**) of the usage of vowels during the period of infancy are found in Figure 1. They represent graphically the proportionate values of vowels at selected age levels of the infant period. The following age levels have been included: 1st (1-2 months), 3rd (5-6 months), 6th (11-12), 9th (17-18), 12th (23-24), and 15th (29-30). For comparative purposes, the figure includes a profile for infants under 10 days of age and one for adults based on Voelker's data.

The detailed development of vowel usage during infancy may be followed in Table 1 and general trends may be noted by means of the profiles. The vowel sounds most frequently present during the first age level are the front vowels [ɛ] and [ɪ], and the middle vowel [ʌ]. Each of these sounds decreases in use with age while the other front vowels [i], [e], and [æ] show some increase. However, comparison of the profiles for newborns and adults indicate at once that the major trend of vowel mastery during infancy lies with the back vowels: [a], [ɔ], [o] [ʋ] and [u]. Inspection of the profiles for newborns and the first age

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TABLE 1. Vowel phoneme percentages.

Age Level	*No. of Infants*	i	ɪ	ɐ	ɛ	æ	ʌ	ə	ɑ	ɔ	o	ɚ	u
1	62	.14	27.39	.16	42.98	1.82	25.18		.21			1.75	.31
2	80	1.10	21.89	1.08	33.91	2.65	25.56	.23	2.18	.10	.18	7.70	3.41
3	75	1.77	24.82	1.58	31.27	2.62	23.44	.25	1.52	.20	.17	8.20	4.17
4	64	1.80	24.96	2.04	31.40	3.13	19.65	.15	2.17	.22	.30	10.12	3.88
5	62	2.09	22.22	2.85	32.35	2.72	16.80	.18	5.34	.47	.68	10.24	4.06
6	62	4.15	23.02	3.25	27.56	4.13	16.17	.20	6.48	.64	1.33	7.71	5.36
7	57	4.32	23.13	3.25	27.03	2.25	16.58	.40	6.64	.80	1.17	8.79	5.69
8	55	6.62	24.96	3.24	22.00	2.97	15.13	.80	6.58	.67	2.25	8.88	5.92
9	50	7.05	22.46	3.07	18.17	3.22	15.73	.77	8.37	1.61	3.76	10.44	5.32
10	41	7.63	20.61	3.01	14.34	3.83	16.16	1.03	10.98	1.63	3.08	11.57	6.10
11	37	9.71	17.27	2.64	12.51	3.85	14.65	1.55	11.73	2.30	5.29	10.97	7.49
12	31	11.42	19.22	3.11	12.19	4.38	13.15	1.02	13.09	3.08	4.54	10.27	4.50
13	32	11.63	18.42	4.20	8.72	4.30	13.58	1.04	13.43	2.27	6.58	10.59	5.24
14	24	12.16	21.07	2.54	8.94	4.89	12.63	1.95	14.95	1.52	5.27	9.42	4.58
15	19	13.44	18.38	2.70	7.48	4.63	13.43	3.24	13.67	2.54	6.74	9.51	4.19
Adult*		7.40	20.56	5.21	7.98	8.06	1.12	17.76	10.85	5.58	5.54	4.60	5.21

*Voelker Data.

level reveals little difference between them. But an increase in the use of back vowels makes its appearance in the profile for the 5th-6th age level at the expense of front and middle vowels. The remaining profiles show an overall tendency to approximate adult vowel usage. An examination of the profiles for the 15th age level and the adult, however, makes it evident that further percentage changes occur in the use of the following

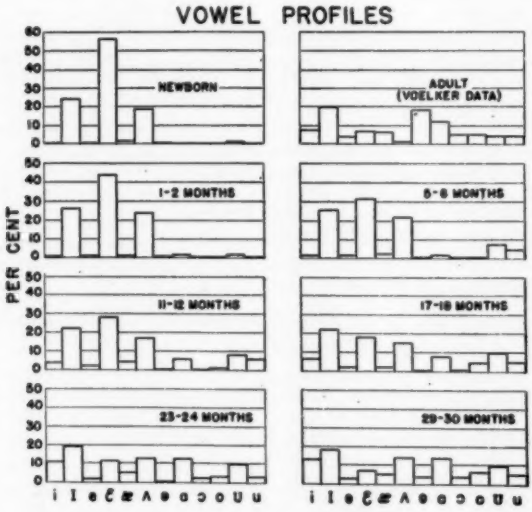

FIGURE 1. Proportionate values of vowels at selected age levels of the infant period.

TABLE 2. Percentages of vowel categories.

Age Level	*Front*	*Middle*	*Back*
1	72.40	25.21	2.30
2	60.63	25.79	13.57
3	62.06	23.69	14.26
4	63.33	19.80	16.69
5	62.23	16.98	20.79
6	62.11	16.37	21.52
7	59.98	16.98	23.09
8	59.79	15.93	24.30
9	53.97	16.50	29.50
10	49.42	17.19	33.36
11	45.98	16.20	37.78
12	50.32	14.17	35.48
13	47.27	14.62	38.11
14	49.60	14.58	35.74
15	46.63	16.67	36.65

sounds: [i], [e], [æ], [ʌ], [ə], and [u].

The data presented in Table 1 may be analyzed in terms of the classification of vowel elements into front, middle and back vowels. These percentages are found in Table 2. A glance at this table makes it clear that during the two and a half year period of infancy there are decrements in front and middle vowel sounds and a decided increment in the mastery of back vowels. Front vowels drop from 72 to 47 per cent, and middle vowels from 25 to 17 per cent. By contrast, back vowels increase in usage from 2 to 37 per cent. Curves of the progress of these three classes of vowel sounds are presented in Figure 2. The increment in back vowels and the decrement in front vowels are very apparent from the graph. Middle vowels, after an initial decrease during the first year of life, thereafter show little variation.

SUMMARY

This report is concerned with the usage during infancy of each of the vowel sounds. The analysis is in terms of the precentage of the total occurrence at each of fifteen age levels. An age level includes a period of two months. A table was prepared in which may be found the percentage of oc-

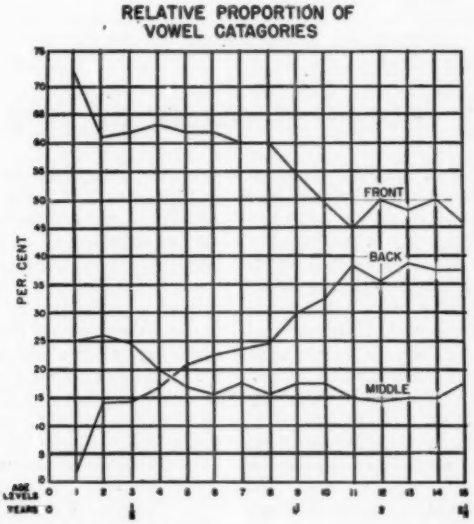

FIGURE 2. Curves of progress with increasing age of three classes of vowel sounds (front, middle, and back).

currence for each vowel sound for each age level throughout the first two and a half years of life. Vowel profiles of a selected number of age levels are presented, and curves of the development of front, middle and back vowels are given. The analysis shows that while most of the vowel sounds are used by young infants, only three of them, [ɛ], [ɪ] and [ʌ], are consistly used by infants at the first age level (1-2 months). The newborn infant's vowel sound repertoire is decidely unlike that of the adult. There is in infant vocalization a preponderance of front and middle vowel utterance during the first year of life which thereafter gradually diminishes, while back vowels increase until, at two and a half years, the percentage distribution approximates that of the adult without, however, being identical with it.

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WHAT SHOULD TEACHERS BE TEACHING?

The gullibility of vast numbers of otherwise apparently intelligent people to the propaganda, quackery, and improbabilities of the day is perhaps the best index of the degree to which scientific habits of thought, as contrasted with a lot of facts *about* science, have penetrated. Thousands of people, including the so-called educated, find it quite reasonable to believe and act upon a radio report of an invasion from Mars. So superficial is the habit of rational and scientific thinking about social events that in situations at all critical, even the scientifically trained promptly abandon this comparatively recent acquisition in favor of a more primitive and emotional personalistic method which the conditionings of childhood, and generations of prescientific thinking have ingrained in us in a way that it will take centuries for science to overcome. Yet this is the principal and most urgent task which faces our educational institutions. To the extent that it is achieved we shall be masters of our social as well as our physical world.

From *Can Science Save Us?* by George A. Lundberg. (Longmans, Green, 1947.) Page 68.

JOURNAL OF SPEECH AND HEARING DISORDERS, 1948, **13**, 35-43

Fundamentals In The Treatment Of Communicative Disorders Caused By Hearing Disability. Part I.

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William G. Hardy

THE FIELD of audiology has developed rapidly in recent years, and there is good reason to believe that a nation-wide remedial effort is now under way that promises much benefit to the millions with hearing handicaps. The progressive improvements in vacuum-tube hearing aids, war-time research in the many subcategories of audiology, the success of the military rehabilitative centers, the development of precision electronic instrumentation for use in clinical procedures, experimental efforts to improve the efficiency of retraining methods—all these activities have helped to stimulate interest in the problems connected with speech-hearing disorders.

As one reads and hears current discussions of audiologic problems, however, he is apt to realize that there is relatively more widespread interest in and acceptance of new instrumentation and new techniques for diagnosis and the fitting of hearing aids, than in the philosophy and methodology of aural retraining which have developed concurrently in recent years. There is considerable evidence that our retraining concepts have lagged behind our technological achievements.

What is indicated, perhaps, is a kind of methodological inventory, an examination of the principles involved in aural retraining, and an attempt to outline the fundamentals of clinical work with hearing disability. The need for this sort of inquiry is readily apparent. If the psycho-social readjustment of the millions of persons with a serious acoustic handicap is to be realized, there must be sufficient clinical service available. Centers must be established; personnel must be trained. What will be the organization of these centers? What clinical methods will be adopted? What objectives will be pointed up? Who should be the worker in clincial audiology and what shall be his work?

Audiology is a highly derivative field of knowledge. It represents a synthesis of many other fields—otology, physics, psychology, linguistics, acoustics, pedagogy, to mention a few—undertaken for a special purpose: to study and treat the class of problems that relates directly to the functions of hearing. The developments and experiences of recent years suggest that, if present progress in audiology is to be utilized to the fullest degree, there must be a marriage of ideas the like of which has rarely been achieved heretofore. The medical specialist in ear-nose-and-throat, for instance, may readily accept demonstrated diagnostic techniques as serviceable, while he pays only lip-service to the training techniques which are fundamental to the solution of the hearing problem for the individual. He

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finds himself in a maze of psychoacoustic and pedagogical terms and procedures which seem to have little relation to his professional training and interests. The teacher of lip-reading, thoroughly trained and experienced in this special branch of audiology, may have little comprehension of the correlative work in auditory training with a hearing aid which is so necessary for the hard of hearing person. Indeed, the principles and methods of auditory training are evidently quite mysterious to many of those with special training in other aspects of remedial work. Then, too, many teachers and clinicians whose experience has been centered on the problems of the deaf have not become familiar with recent technical advancements in electronics that have opened new ranges of retraining in sound-discrimination even for the profoundly deafened.[1] The speech correctionist, on the other hand, may find himself playing only an isolated role in a remedial undertaking where, as a matter of course, his special knowledge and experience should fill a vital need.

One is apt to find himself considering lip-reading, speech techniques, auditory training with a group hearing aid, the fitting of an individual hearing aid, diagnostic tests, the medical treatment of the nasopharynx, and the like, as separate entities—good and sufficient ends in themselves—in relation to the needs of those with a hearing handicap. It is time to question such an attitude, for it is the integration of the knowledge and services of the various medical and non-medical specialists that is so vital for the development and practice of clinical audiology. Without question, the clinical treatment of hearing disability is a complex process that presents many facets to the specialists concerned, and the temptation is strong to emphasize the particular elements that lie closest to the individual's interests and experience. Yet, sound clinical processing must always be based on well-founded operational techniques, and, while it is important that clinical procedures remain fluid and that the clinician maintain an experimental attitude, there must be a thread of unity that will serve to integrate the operations.

What are the facts to be known about auditory dysfunction? The type of hearing loss, the duration, family history, the presence or absence of related physical occurrences—tinnitus, headache, vertigo, and the like—the individual's age, the threshold measurements obtained by pure-tone and speech audiometry, possible etiology,—these are the usual diagnostic facts, and it is unreasonable to initiate any course of retraining without such a complete picture. Yet, the picture is not quite complete, for we are concerned with much more than the peripheral hearing mechanism. We are concerned with a person, with an individual who has social and economic responsibilities and aspirations, who has family and friends, likes and dislikes, whose very self is determined in large part by his communicative habits and abilities. We must know a great deal about this person, his education, his job, his social position, language-habits, intelligence, and general behavior, before we have enough information to diagnose his needs and direct his remedial course.

When does a hearing loss become a handicap? The definition adopted by the Armed Forces and the Veterans Administration specifies this state as a hearing loss of 30 decibels in the better ear in the frequency-range of conversation, or by speech-reception-intelligibility-threshold. This has

[1]The terms *deaf* and *deafened* are used in reference to those persons whose auditory dysfunction, whether congenital or adventitious, has seriously interfered with the normal development of language habits and thus has necessitated special education in childhood. The term *hard of hearing* is applicable to those persons whose disability postdates the acquisition of reasonably normal communicative habits. No special brief is held for these definitions; they are in common use.

proved to be a workable definition that serves a useful purpose. Yet it is quite arbitrary. Hearing is not a static activity, but a dynamic part of the communicative process. An audiologist may determine how much hearing loss, by and large, is apt to be handicapping for a child or an adult in any given situation, but the exact nature and extent of the handicap cannot be estimated without taking into consideration the whole personality of the individual. Much depends upon the pattern of his life; upon what he has been, what he is, and what he hopes to become.

Some few hard of hearing persons can evidently get along fairly well with a moderately severe hearing loss; others, with much less impairment according to tests of auditory acuity, are hopelessly confused and have lost confidence to the extent of withdrawing from normal social contacts. Some persons are reluctant to admit their handicap, for various reasons, not always realizing that their failure to face the truth about themselves is actually costing them dearly in peace of mind, in exhaustion of energy, and in daily happiness. Moreover, it is probably true that a great many persons with a hearing impairment of long duration compound their handicap by developing bad listening habits, a feature not of the peripheral mechanism but of the 'mind' between the ears. Then, too, a significant percentage of hearing disabilities are psychological in part; involved here is probably a type of neurasthenia related to complex behavioral problems wherein part of the hearing dysfunction is only a symptom of maladjustment.

In short, a handicapping hearing loss is the amount of hearing disability which is subjectively bothersome to the individual whether or not he admits it. Does the person with such a loss need a hearing aid, auditory training, speech reading, speech training, nasopharyngeal irradiation, a change of jobs, a vacation from his responsibilities, a new perspective, or Dorothy Dix? Or a combination of these?

The audiologist must be able to answer these questions before he assumes that the necessary diagnosis has been made. An auditory dysfunction is handicapping according to the communicative habits and needs of the individual, and these, in turn, are directly related to the 'whole person.' With inadequate communicative means, the 'whole person' is apt to undergo a radical change in his psychosocial existence. The clinical audiologist must accept the responsibility for helping the individual to compensate as well as possible for his communicative disability, must help him select the tools, and learn how to use these tools, which will enable him to regain and maintain a reasonable measure of social and economic self-sufficiency.

The thesis of the present discussion is that hearing disability is essentially a communicative disorder that may effect the very core of the individual's behavior. Accordingly, it is believed that both diagnosis and therapy should be governed by the objective and subjective relationships within the individual that effect his communicative habits. Once these are re-established at the optimum level, he has the means to be an essentially normal person who knows his difficulties and limitations in dealing with his fellows. *Rehabilitation*, as an idea, can have no fuller realization. The therapeutic program must be developed to arrive at this objective, and it is not complete until this objective is attained.

Obviously, such a goal can only rarely be fully achieved in a brief period of clinical handling. Yet, the necessary groundwork can be laid, fundamental values can be taught, and all the essential tools can be introduced. *We must know what we are treating.* Granted that the 'whole person' is involved, the audiologist must concentrate his attention on something more tangible than personality. He is

specifically concerned with a communicative disorder. A communicative disorder, in terms of the present discussion, is usually a dysfunction or malfunction of the peripheral-central mechanisms that more or less seriously interferes with the individual's daily activities. It involves impaired hearing, but by no means exclusively. Moreover, its effect carries beyond the individual into the community of which he is a member; for communication is not an individual but a social activity, not static but dynamic. Exactly what this disorder involves may be described reasonably well by considering the place of language in society.

The function of language, as Bloomfield outlines it according to the principles of behavioral psychology, may be illustrated by this figure:[2]

S——> r——————s——> R

Here *S* represents a biologically significant stimulus; *R* represents the appropriate response. These may be simple or highly complex. Roughly speaking, they are our *handling activities*—what some sematicists call the 'non-verbal level of existence.' The chain, *r——s*, refers to the verbal activities, the 'act of language.' as Bloomfield puts it. Because of these verbal activities, perhaps the most distinctly human element of humanity, we are able to take part in group action, we become members of a social community in which one language is native. 'Language bridges the gap,' says Bloomfield, 'between individual nervous systems.'

In one of its simplest forms—what the linguist calls the actor-action relationship—this figure can be interpreted readily enough. Mr. A and Mrs. A are at home reading; the window is open behind Mr. A's chair, and Mrs. A feels an uncomfortable draft (*S*). She says, 'Please close the window' (*r*). Mr. A hears her (*s*), may or not respond verbally, rises and closes the window (*R*). Mrs. A feels better (*S————R*). If Mr. A does not hear Mrs. A's request, or closes the door instead of the window, the communicative situation is unsatisfactory; the verbal activity has failed to bring about the response implicit in the biological stimulus. If Mr. A barks, 'Close it yourself!' there may be a disorder, truly enough, but not of a communicative sort. If Mr. A responds with 'Huh? What'd you say?' he may not be hard of hearing; he may have been quite intent on his reading. So, too, with the 'hard of hearing' seven-year-old whose habits have driven his mother to distraction. When, at her wit's end, she takes the child to the otologist for a check-up, she may be dismayed to learn that the child can hear the physician's Mickey-Mouse watch at 60 inches.

Hearing and listening are closely associated but quite different elements of the communicative situation. One is an attribute of the peripheral mechanism, the other of the central-associative system; together they compose the basic elements of *s* in the figure under consideration.

The bio-socially significant elements of communication—*S*, the speaker's stimulus, and *R*, the hearer's response which completes the chain of events—are linked by the circuit *r————s*, the symbolic elements. Moreover, in terms of life-situations, it is the *S* and *R* together which constitute the meaning of the link *r————s*. Therefore, we may say that a handicapping hearing loss distorts or suppresses the communicative link in such a way as to make the continuum *S————R* difficult or uncertain or confusing or inefficient.

When this happens regularly, the individual with the hearing loss is no longer capable of normal psycho-social adjustments in the daily events of his life. This state of affairs represents a communicative disorder. It is much

[2]Leonard Bloomfield, "Linguistic Aspects of Science," *International Encyclopedia of Unified Science*, Volume I, Number 4, University of Chicago Press, Chicago, 1939, p. 15.

more than a passive, static condition limited to the single personality; the effects are intersubjective, and are seriously compounded in terms of the individual's relation to the social community in which he lives. As this maladjustments persists — with the hard of hearing person, for instance— it may exact a high toll in concrete details of the individual's happiness and welfare. He faces failure after failure in the activities that are most distinctly human; he loses confidence; he finds difficulty in doing his job; his social existence is no longer satisfying. He misunderstands and is often misunderstood, and, rather soon, he is apt to become quite a different individual. These are the dynamics of a communicative disorder caused by hearing disability.

At the risk of laboring the obvious, it might be worthwhile to review some of the assumptions upon which remedial work with communicative disorders of this sort may be based. In general, we are concerned with the field of psycho-linguistics. Whatever else he is, man is a social person whose every thought and action are intimately connected with his habits of using symbols. The modern theorist usually shares the conviction, persistent in the history of ideas, that civilization is a derivative of man's capacity to use symbols, that human behavior cannot be divorced from the individual's symbolic functions, that symbol-making is the fundamental process of the 'mind.' However one chooses to describe this 'mind,' 'it' is the result of the individual's habitual use of the visible and audible codes.

These symbol-codes are learned mainly by imitation, controlled by whatever environmental stimuli are present. So far as conventional language is concerned, this is a process which is begun in early childhood. 'A speech-form has been acquired by demonstration,' writes Bloomfield, 'when the learner utters it in the conventionally appropriate situations and responds to it by the conventionally appropriate actions.'[3] This manner of acquisition of a conventional language-code is the keystone of the communicative process wherein at least two nervous systems are in touch with each other. Therefore, in practical terms, speaking and hearing, with their derivative forms of writing and reading, are the basic elements of the communicative process. Any serious disturbance or disorder in either of these elements interferes with communication. These two elements cannot logically be separated; they are correlates and, together, compose an interrelated process.

Moreover, the use of language in communication usually has a purposive quality; precisely what this is depends upon the particular meanings that qualify the speaker's stimulus and the hearer's response. At least two 'minds' are involved, however; therefore, communication, with all its attributes, is an intersubjective activity. There is always more than one person involved in the success or failure of communication. Because our verbal activities are usually limited to one language, common to the group, the communicative situation relates the individual's behavior directly to that of other persons, and is therefore perhaps most readily analyzed in terms of social psychology.

These ideas are so familiar that their clinical significance is oftentimes overlooked. Our habits of speech and hearing are so universal, so much taken for granted, that any serious impairment of either of these functions results in a breakdown of the machinery of human relations, and, in some cases, may result in an unhealthy conversion of the individual's behavior in terms of social adequacy. The more marked or distorted be the hearing loss, the greater the inadequacy and confusion with which the individual responds.

So far as organic deafness is con-

[3]Leonard Bloomfield, *ibid.*, p. 19.

cerned, if the causes of the impairment are congenital, or if the onset precedes the development of normal communicative skills, a special educative scheme must be employed in order to bridge the language-gap left in the inadequacy of the organic mechanism. If the disorder is adventitious, with the onset occurring after the basis of normal language has been established, the problems of readjustment are different in many respects and often appreciably easier to solve.

In either case, however, the individual is cut off from his fellows. There is not only psycho-social maladjustment, of a degree varying with the individual, but bio-social inadequacy, with results that may effect every aspect of the individual's behavior; he not only misunderstands but is misunderstood, often with embarrassing consequences to himself and to those associated with him.

So far as clinical audiology may reflect a useful recognition of these fundamental ideas about man and his language-habits, it is necessary to design a set of procedures that give promise of optimum achievement on the part of the individual in understanding his problems and in learning to compensate for the communicative disorder. To this end, the clinician can no longer consider diagnostic tests, the fitting of a hearing aid, speech reading, auditory training and speech training as separate entities, somehow relatable to the problems of hearing disability. He must consider these aspects of audiology, together with all other aspects which can contribute to the task, as grist for the clinical mill, to be ground as rough or as fine as the individual's needs require.

The clinical situation is this: the clinician is confronted with a person who, although he may be enjoying general good health, has a communicative disorder. One has no right to make any further statement about him or plans for him until there is assembled a full case-history and a complete set of diagnostic data, including sufficient information about the individual's personality and behavior to warrant making an appraisal of his problems and a communicative prognosis. He may require medical treatment initially or concurrently with his clinical course in communicative retraining. The audiologist may find many inconsistencies in the diagnostic information, and require several retests. The individual's hearing loss may be congenital or of recent onset; he may be an infant or an old man; he may be intelligent or dull. He may or may not need a hearing aid. He may be a laborer or a corporation executive. His deafness may be one of many types, progressive or arrested. There may or may not be serious psychogenic involvements in his communicative behavior. All these possibilities are daily fare in a large clinic; the situation is indeed complex. With all the knowledge and resources at his command, the clinician must undertake to treat the communicative disorder in an optimum period of time. Precisely how it is treated and how much time should be devoted to the treatment, are individual variables, relating to the patient and to the clinical circumstances.

This approach to communicative disorders associated with hearing disability suggests the nature of the clinical treatment involved. The learning, the perceiving and the production of language utilize a closely interrelated series of auditory, visual and kinesthetic stimuli, associations and motor-responses. Inasmuch as language is learned chiefly through the auditory mechanism, hearing remains the most natural means to understand it. The auditory sense and its related associative patterns are so predominant that the average person is apt to be quite unaware that other perceptive functions do or can supplement his 'hearing' habits. Whenever the hearing is even moderately impaired, therefore, it is desirable that the individual learn

to use whatever adjuncts—visual, kinesthetic or situational cues—are available to reinforce the faulty auditory pattern.

As the degree of hearing loss is greater, or the acoustic response is more distorted, more extensive reinforcement is necessary. The type and extent of hearing loss can be determined by clinical tests, but the specific details of the remedial work are determined primarily by the individual's behavior in communicative situations that are typical in his daily life. Without appropriate readjustment of his communicative requirements, the individual is apt to live in a strange world of intersubjective distortion, where meanings are misapprehended, friends and jobs are lost, and the dynamics of existence are persistently out of phase, with the resultant tensions, insecurity and frustration that so commonly occur. Unfortunately, the extent of his communicative disability is not always self-evident, a state of affairs that only serves to multiply his problems.

Moreover, if only for the reason that the world takes so much for granted the presence of normal communicative means within a homogeneous group, the average person does not think about the effects of interference with normal linguistic intercourse. Instead, the 'deaf-mute' is often looked upon as somehow subhuman, and the hard of hearing person as somewhat ridiculous. Since the dawn of Western Civilization, the deafened person has been the butt of ridicule, primarily, one must assume, because he is so confused and socially awkward; because he cannot do what everybody is expected to do—converse freely with his fellow men. The audiologist is only too familiar with the case-history that gives evidence of a family's annoyance with its hard of hearing member. The individual is on the defensive, his point of view distorted; often, he has rationalized his trouble to the extent of changing his way of life and foregoing associations he formerly enjoyed. Disappointed, tired and confused from the strain of trying to understand, constantly under pressure in his job, often 'missing the point' in conversation, no longer able to enjoy church or public entertainment, heckled by his family's annoyance and suffering from his friend's neglect, it is no wonder that he is apt to look to the future through very dark glasses.

This is the state of affairs which the clinical audiologist faces, and it is wise for him to try to see it clearly and see it whole. In terms of retraining procedures, it is probably best not to compartmentalize the work to any greater extent than is necessary. What may be done in this respect depends largely upon the physical facilities and the staff-personnel. Training in speech reading will help the individual to use visual and muscular cues to *supplement* the percepts of his residual hearing. Only with cases of profound deafness is speech reading necessary to supplant auditory percepts. One cannot become a master of speech reading in twenty or thirty lessons, but within this learning period, provided that the work is based upon a broad phonetic analysis of language and is gauged to the individual's interests and linguistic ability, he can learn the basic technique of using speech reading as an adjunct in the communicative situation. So, too, with the use of a hearing aid as an adjunct to the other communicative skills, the individual can learn to use his residual hearing intelligently. Too many hard of hearing persons have been led to believe, however, that a hearing aid is a magical instrument. Without professional guidance, they are quite unprepared to handle the problems of ambient noise and speech distortion that are so typical of the first experiences with a wearable hearing aid. Yet, with an appropriate hearing instrument, the supervised experiences of auditory training can in a few

weeks carry the individual to a point of adjustment that marks the good hearing aid wearer. The point is that the individual is not studying speech reading nor auditory training, *per se*, but his communicative habits; the precise nature of the individual's curriculum is governed by a careful appraisal of his needs. Speech training should be included as another ingredient of the total communicative situation.

The recently handicapped person rarely gives evidence, however, of serious speech impairment associated with the hearing loss; accordingly, the emphasis in work with speech habits should be placed upon 'ear training' that may properly be expected to help him in the interpretation of distorted acoustic effects, as well as to sharpen his articulation. Work with the speech elements of pitch, rate, volume resonance and quality—so necessary for the deaf child—may reasonably be designed for the recently hard of hearing adult as insurance against future deterioration.

In sum, the therapeutic effort begins with a thorough analysis of what is residual and redeemable in the sequence *r*————*s*; this, in turn, is supplemented by the correlation of *r*————*s* with *S*————*R*, according to the information available about the individual's behavior — information, that is, about what he has been, what he is, and what he wishes to become. There are facts that relate specifically to his communicative habits, and to his mastery of the tools necessary to compensate for his communicative disorder. So far as necessary psycho-social readjustment is concerned, the catalyst is mental hygiene, or psychological orientation, combined with sufficient facts about his impairment to enable the individual to objectify his disability and learn to meet his problems squarely.

The audiologist deals not with a peripheral mechanism but with a person; the clinical objectives are to diagnose the communicative disorder and to initiate the remedial measures suitable for the needs of the person. The attainment of these objectives often involves an extensive readjustment of his behavior, part of which has to do specifically with the person's experience with impaired hearing, all of which is concerned with his language-habits in communication. In a way, the retraining program is largely psycho-therapeutic; under clinical guidance, with careful training in communicative skills, the individual learns that he can be an essentially normal person who knows how to compensate for his disability.

Conclusion

Recent developments in audiology give promise of considerable benefit to millions of persons with hearing impairment. Technological progress has tended to outdistance philosophy and methods at the clinical level, and it is believed that, if clinical audiology is to advance, some stock-taking is indicated in order to clarify fundamental principles. These principles must represent a synthesis of the old and the new, in both technological and pedagogical terms, with the emphasis upon the need to maintain an experimental attitude in order that current findings of a fast-developing field of knowledge may be put to good use.

When one considers all the clinical facts relating to a permanent hearing disability, he can only conclude that the affected individual suffers from a communicative disorder. Because our language-habits are so basic to our existence as humans, a communicative disorder exerts profound influences upon our behavior. In these terms, audiologic retraining, although directly concerned with the relations between hearing and communication, is essentially a matter of helping the individual learn new attitudes that will enable him to handle the necessary compensatory communicative skills with confidence and satisfaction. Not the hearing mechanism but the psycho-social

performance of the person-as-a-whole is in need of sound diagnosis and careful remedial treatment. The individual must be led to face his problems objectively, and taught to compensate for his communicative difficulties in such a way that he can live a reasonably normal existence in a hearing world. This must be a co-operative endeavor on the part of medical and nonmedical specialists, each contributing his part to a closely-knit clinical program. In these terms, the precise details of clinical handling are keyed to the individual's needs in communication. Once accurate diagnosis has been made, the relative stress to be put on speech reading, hearing-aid fitting, auditory training, speech training and mental hygiene in the integrated program is clear-cut.

Such an approach to the problems of a handicapping hearing loss argues against the traditional compartmentalizing of remedial work. It is believed that only by considering the fundamentals of hearing disability as a communicative disorder can the psychosocial adjustment of the hard-of-hearing person be objectified and maintained at an optimum level.

SPEECH, MAPS, AND SANITY

Supreme among the means essential to the enterprise of science is human Speech. Every language has a structure of its own. The effectiveness of a language as a scientific instrument, or (more generally) as a human instrument, depends upon the similarity of its structure to the structure of the human nervous system and the structure of the world, quite as the effectiveness of a map depends upon the similarity of its structure to the structure of the territory represented by it.

Deeply and subtly imbedded in the structures of all existing languages are to be found many vestiges, impressions and elements derived, in the course of long ages of linguistic evolution, from primitive beliefs, primitive metaphysics, and prescientific or primitive views of life and the world. These languages—because their structures are thus infected by obsolete metaphysics and myth, by every manner of elementalism, by innumberable objectifications of sheer abstractions, by countless indentifications or confusions of the various levels of abstraction, and are thus radically dissimilar to the known structures of the human nervous system and the world—are, in fundamental respects, ill adapted, not only as instruments for scientific research and scientific communication, but also, and even more unfortunately, as educational instruments for the protection, guidance, disciplining, and development of children in ways most favorable to sanity and plenitude of life.

From *Mathematics as a Culture Clue* by Cassius J. Keyser. (Scripta Mathematica, 1947.) Page 143.

JOURNAL OF SPEECH AND HEARING DISORDERS, 1948, **13**, 44-48

Studies In Clinical Techniques

III. Mandibular Facet Slip in Cerebral Palsy.

Martin F. Palmer*

THE phenomenon described in this paper as mandibular facet slip has not as yet been recorded in the literature, and was first noted at the Institute of Logopedics in work with cerebral palsy in 1934. Since in cases of tension athetosis and spastic paralysis it constitutes a very serious obstacle in developing precision and normal rate of articulation, the movement needs to be analyzed and clinical techniques developed to deal with it.

Mandibular facet slip occurs when it is impossible or difficult to depress the mandible with a central pivot at the facet: 'hinged' movement. As a result of the inability to depress the mandible by 'hinged movement,' the external pterygoid muscle on each side goes into contraction and moves the mandible forward. A pivot is then established at the mandibular angle and depression of the jaw occurs.

Recognition of mandibular facet slip is extremely easy as the articulation of the condyle in the glenoid fossa lies below the very thin layer of the parotideo-masseteric fascia and can be palpated easily, directly anterior to the tragus. When a normal individual is asked to open his mouth only a small movement is noted. In mandibular facet slip there is a bulging of the condyle forward and outward which is easily detected. Some cases move the mandible so far forward in the effort to develop a pivot that the mandibular joint is removed completely from its socket temporarily, the jaw opening and closing with a snapping, bouncing movement.

The condition is found with extreme frequency in tension athetosis, spastic paralysis and rigidity, and infrequently in overt athetoid tremors. It is occasionally found in ataxia. Analysis will be made of four common involvements in tension athetosis and spastic paralysis:

Involvement of the masseter and internal pterygoid muscles.

Although either of these muscles may be at fault, or both of them may be, the effect realized is identical, or nearly so, and their malfunctioning will be described under the single heading. Normally, the mandible is depressed by relaxation of the mandibular elevators, the masseter and internal pterygoid, and the temporalis muscles. In tension athetosis and spastic paralysis either the masseter or the internal pterygoid, or both frequently overcontract. It is not possible to achieve, except in a very limited way, a 'hinged' depression of the mandible. Since this movement is essential for life it is fortunate that a mechanism can be developed to substitute for normal depression in the act of chewing, etc.

Part I of Diagram 1 shows the normal depression of the mandible. The mandible hinges around point D which is the condyle of the mandible and is closed by action of the masseter, internal pterygoid muscles and the temporalis. Part II of the same drawing shows that if the masseter and internal pterygoids are held fixed, a pull by the external pterygoid muscle will

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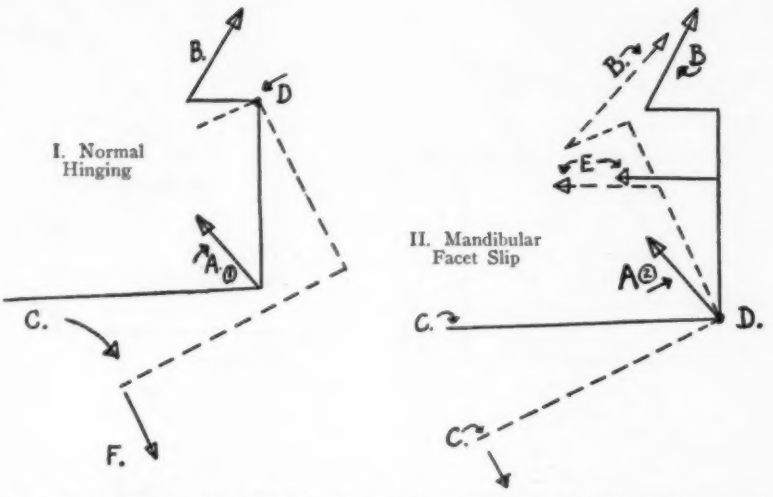

DIAGRAM 1. Tension athetosis or spastic paralysis of masseter and/or internal pterygoid and resultant mandibular facet slip.
A. Masseter and/or internal pterygoid: I. Normal. II. Involved.
B. Temporalis.
C. Mandible.
D. Hinge.
E. External pterygoid.
F. Gravity, tonus of suprahyoids, etc.

pull the condyle forward with consequent depression of the mandible, and the hinge point or center of revolution will be at the angle of the mandible. This is an awkward and cumbersome movement but does accomplish opening the mouth.

Involvement of the temporalis.

This is not as clear a mechanical phenomenon as the first method. (See Diagram 2.) If the temporalis is involved it is extremely difficult to open the mouth at all. This muscle directly pulls upward and backward on the coronoid process of the mandible, and thus no 'hinged' jaw movement is possible except with extreme difficulty. However, a study of the anatomy shows that if the external pterygoid muscle is thrown into contraction, the whole jaw is pushed forward and the movement is not directly opposed by the temporalis muscle. Then, after the jaw is thrust forward, a direct pull on the anterior portion of the mandible by the geniohyoid and the anterior belly of digastricus will produce a hinge at the ramus of the mandible.

Involvement of digastricus and/or geniohyoid.

If the anterior belly of the digastricus or the geniohyoid muscle, or both, are involved, there is a constant effort toward depression of the mandible. (See Diagram 3.) This is counteracted by contraction of the masseter, internal pterygoid, and temporalis muscles so that what may happen is that the jaw is fixed and open all the time. Or, in tension athetosis particularly, what may happen in an overcontraction of the masseter muscle and internal pterygoid to compensate for the over-pull downward on the jaw. Thus, the final result is a slipping forward of the

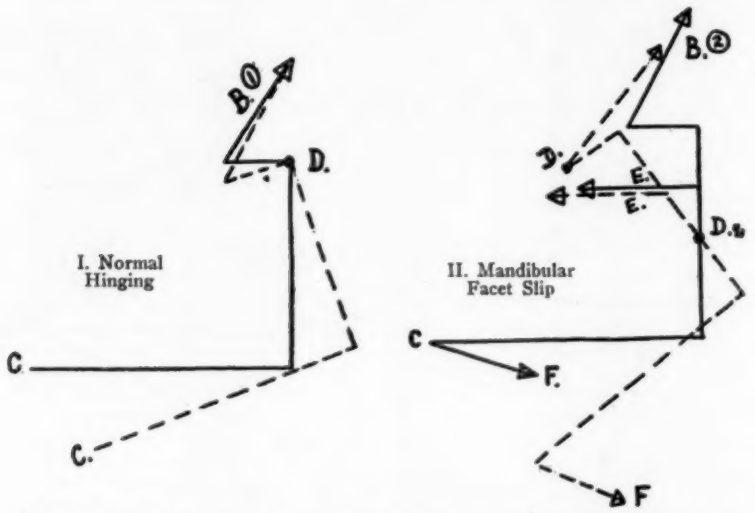

DIAGRAM 2. Tension athetosis or spastic paralysis of temporalis and resultant mandibular facet slip.
B. I. Temporalis. II. Involvement of temporalis.
C. Mandible.
D. Hinge.
E. External pterygoid.
F. Active contraction of anterior belly of digastricus and geniohyoid.

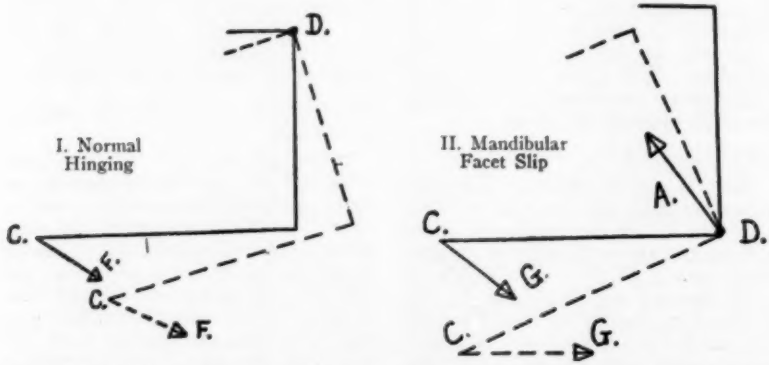

DIAGRAM 3. Tension athetosis or spastic paralysis of anterior belly of the digastricus and/or geniohyoid.
A. Compensatory contraction of masseter.
C. Mandible.
D. Hinge.
F. Normal gravity, tonus, etc.
G. Involvement of mandibular depressors.

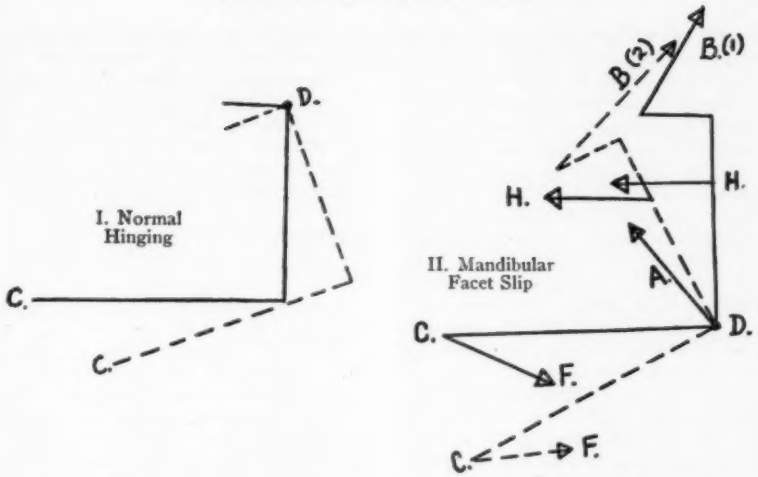

DIAGRAM 4. Tension athetosis or spastic paralysis of external pterygoid.
B. I. Compensatory contracture temporalis. II. Relaxation of temporalis to retain mandible in position.
C. Mandible. D. Hinge.
F. Compensatory contracture of mandibular depressors.
H. Involvement of external pterygoid.
A. Compensatory contracture of masseter.

mandible similar to that which is found in overcontraction of the masseter.

Involvement of the external pterygoid muscle.

The jaw may be kept open all the time with the tip of the mandible being fixed; or, if the jaw is closed it is only closed as the result of combined contraction of the temporalis, masseter and internal pterygoid muscles pulling upward and backward in general, and the anterior belly of the digastricus and the geniohyoid muscle pulling downward and backward. (See Diagram 4.) This again produces the same result, so that when the unaffected muscles are relaxed in order to produce an opening, there is a mandibular facet slip.

Apart from these processes and their ramifications, a portion of the picture is to be seen in the fact that in the majority of instances there are deformities of the lower teeth and of the tongue. The tongue may appear small and depressed in the mouth or may appear to push heavily forward against the lower teeth. If the tongue is retracted in the mouth, it will be found that the lower incisors point inward instead of growing vertically. If the tongue is pushed forward in the mouth it will be noted that these incisors point outward. The picture and the analysis of the reasons for this condition are coupled with the mandibular facet slip and also with other conditions that will be analyzed in a later article.

CORRECTIVE MEASURES

The correction of the condition proceeds in two general directions. In some of Pavlov's work is was shown that if any spot on a dog was touched gently and repeatedly a generalized muscular inhibition would take place and the dog would eventually go to sleep. At the Institute of Logopedics a similar technique has been developed and will be described in detail in a later article. The temporalis, masseter,

digastricus and geniohyoid muscles react very well to this type of technique. It is not possible to utilize this effect on the internal pterygoid muscles.

The second step in correction consists of passive movements of the mandible. The operator takes hold of the chin of the subject and moves it gently upward and downward, not more than a quarter of an inch, checking with the non-occupied hand the jaw joint so that the jaw is not opened passively any further than the facet remains in place. It will be found in most cases that such a movement can be made even if it is only an eighth of an inch in extent. This passive movement is done daily from two to six months until an opening of an inch or an inch and a half can be made passively without the active cooperation of the case.

This clinical procedure is not too effective, although it is commonly used in both tension athetosis and spastic paralysis.

When about an inch of movement is obtainable, the case then begins active depression against resistance. The operator's hand is placed under the chin of the subject and the subject attempts to depress the mandible and still maintain the joint in place. Resistance properly handled increases the sharpness of sensory in-flows. Finally, the case voluntarily makes very small movements and gradually extends the range.

In some cases an increase of tension is noted. Resistance techniques should not be used in such subjects.

As soon as possible, passive manipulations of the jaw in 'hinge' movement should be begun; and the same procedures are carried out with the hard food orientation program presented in a previous article (**1**). The child is given a very small piece of toast or gum and is shown how to make very small chewing movements in a hinged fashion. Sucking movements are also carried out with hinged movements of the mandible. Of course, protusion of the mandible and chewing from side to side are carried out by normal function of the internal pterygoid. The integration of the external pterygoid with the other muscles used for chewing is necessary in order to have a smooth flow of energy surging from one group to another. Biting, however, can easily be taught after some types of movement have been successful, and the jaw movement can be hinged for biting.

What is desired in the acts of chewing, sucking, and swallowing, of course, is a specific ability to select, from the muscles available, the proper contractors to accomplish speech. The external pterygoid ought to operate normally together with the normal contractions of the masseter muscles and the other muscles involved in the tongue. Many children make much faster progress when the chewing, sucking and swallowing materials are added to this part of the program than when purely formal drill is given. This may be due in part to the interest in eating and may also be due to the fundamental role that these reflexes play in the speech functions.

Summary

Attention is called to a serious deformity existing in cases of cerebral palsy, particularly tension athetosis and spastic paralysis, in which the mandibular condyle slips from the glenoid fossa instead of acting as a hinged joint, resulting in a cumbersome, slow and unprecise mode of speech. Correction of the speech disorders found in cerebral palsy cannot be adequate without reduction of the abnormality. Techniques are outlined as used by the Institute of Logopedics for the reduction of mandibular facet slip during the acts of chewing, sucking, swallowing and speech.

Reference

1. Palmer, Martin F. Studies in clinical techniques II: Normalization of chewing, sucking and swallowing reflexes in cerebral palsy: A home program. *J. Speech Disorders*, 1947, **12**, 415-418.

JOURNAL OF SPEECH AND HEARING DISORDERS, 1948, **13**, 49-50

The Speech Correction Foundation

Wendell Johnson*

THE Speech Correction Foundation was established by action of the Council of the American Speech Correction Association, December 30, 1946. It is an expression of the growing realization that there is a tremendous need for more speech correction workers, expanded clinicial facilities, and intensified research.

As a matter of historical interest, the Foundation, as such, grew out of efforts made by speech defectives themselves to stimulate the greater development of speech correction in the United States. In 1939 a group of stutterers at the University of Iowa organized the Demosthenes Club (named after the Greek, Demosthenes, who is credited by legend with having overcome a speech defect to become one of the greatest orators of all time). The idea spread, and soon there were chapters of the Demosthenes Club in several American cities and universities, and a chapter was formed also at the University of the Witwatersrand, Johannesburg, South Africa. As a result, the proposal was put forth that a national, or even international, organization be developed. The Iowa Chapter members prepared a preliminary draft of a constitution for such an organization, which they proposed to call 'The Stuttering Research Foundation,' and this was presented to the Council of the American Speech Correction Association at its annual meeting in December, 1945.

The Council responded by creating the Foundations Committee, which was instructed to investigate the proposed organization and the general problem to which it related, and to recommend such action as seemed adequate and wise. The Committee, after due consideration, revised the stutterers' constitution, broadened the base of the proposed organization to cover all types of disordered speech, and recommended the setting up of a 'Speech Correction Research Foundation' as an integral part of the American Speech Correction Association. The Council, as indicated in the opening paragraph, approved this recommendation. Later the word 'research' was deleted from the name in view of its comparative specificity in relation to the Foundation's total program.

The objectives of the Foundation are clear and specific:

1. To support scientific research essential to the continued refinement of theory and method in speech correction.

2. To support expansion of speech correction facilities.

3. To support professional training of speech correctionists, as a means of dealing with the grave shortage of qualified workers in this field.

To these ends the Foundation is attempting to raise funds with which to provide teacher-training scholarships, research fellowships, clinical internships, and grants in aid of research and clinical programs.

It is a clear policy of this Foundation to avoid duplicating the efforts of other organizations. There are many foundations and philanthropic agencies, governmental and private, that

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pay treatment cost for individual children, or give financial support to clinics and hospitals where speech defectives are served. Clinics, as well as individual speech defectives, are urged to obtain needed funds from these or other customary sources. No Foundation funds are to be spent for individual case costs. Support of clinical programs is to be kept to the lowest possible minimum. The Foundation proposes to spend its money primarily for two purposes: to underwrite research projects and to provide scholarships for training the professional workers who are so seriously needed. No other organization is devoted specifically to these purposes, and it is clearly our responsibility to develop and to safeguard these basic scientific and professional training activities.

Information concerning the Foundation will be provided regularly in the *Journal*. Contributions to the Foundation are to be addressed to the Secretary-Treasurer, Dr. D.W. Morris, Derby Hall, Ohio State University, Columbus, Ohio. Correspondence regarding the Foundation's program—scholarships, research, etc.—should be addressed to the Chairman of the Foundations Committee, the present writer.

The Foundation is just getting underway. It is designed to meet a most urgent need. It belongs to every member of the Association. By working together, we can make it a substantial source of the money vitally needed to enrich and expand the scientific and professional foundations of speech correction. We can all help to make its objectives known and its needs appreciated. Its scientific and humanitarian fruits promise to be abundant indeed.

NOTICE TO A. S. C. A. MEMBERS

The following statement regarding contracts for speech rehabilitation work with the Veterans Administration has been received from A. H. Monk, Director, Training Facilities Service for Vocational Rehabilitation and Education, Veterans Administration, Washington 25, D. C.:

> The Training Facilities Section of the Vocational Rehabilitation and Education Division of Veterans Administration Regional Offices negotiates contracts for vocational rehabilitation training under the provisions of Public Law 16. The Veterans Administration, in Public Law 16 cases, determines the rehabilitation training necessary to restore employability lost by virtue of a handicap due to service incurred disability, and also selects the training facility at which such training is to be provided. Contracts are required in all cases where institutions or individuals are selected to furnish vocational rehabilitation to disabled veterans under the provisions of Public Law 16. Full particulars concerning contract requirements for vocational rehabilitation training under Public Law 16 may be obtained by contacting the Chief, Training Facilities Section, Vocational Rehabilitation and Education Division of Veterans Administration Regional Offices.
>
> It is trusted that the above will furnish members of your association with the desired information concerning the Division of the Veterans Administration which is responsible for negotiating contracts under Public Law 16.

Members who are uncertain as to the location of the nearest Regional Office of the Veterans Administration may secure this information from the Secretary-Treasurer of the Association, Dr. D. W. Morris, 322 Derby Hall, Ohio State University, Columbus 10, Ohio.

JOURNAL OF SPEECH AND HEARING DISORDERS, 1948, **13**, 51-54

Speech Survey Methods In Public Schools

Vanetta R. Suydam*

THE public school speech correctionist, beginning her program of work for the year, needs to determine the number of children who should receive speech training and the specific types of problems these children present. She must deal each fall with the problems of case finding and case selection.

The purpose of this study was to discover some of the methods successfully used in public schools to locate children who have speech defects and to evaluate these methods in terms of their efficiency and general usefulness. A further purpose was to determine whether or not the speech survey method is the most desirable procedure to follow in locating speech-handicapped children.

Four principal methods for locating children in need of speech training are now used by speech clinicians. The first is the referral method, in which the classroom teachers, principals, parents, or others refer to the correctionist those children needing remedial speech work. The second is the speech survey, to be discussed in detail here. The third is a combination of the referral and the survey. The fourth is voluntary enrollment by the students themselves.

I

The speech survey method is recommended for use wherever possible. If the speech correctionist does not have time to conduct a survey, she should use the teacher-referral method if that method proves satisfactory in providing her with a sufficient number of cases who are most in need of speech training and until the school system can employ additional speech correctionists, at which time the survey method should be adopted.

A speech survey is the gathering of information about students in a given school or locality for the combined purposes of determining (1) the number of children whose speech is defective, (2) the general types of defects represented, and (3) the need for speech correction work in individual or group form.

Three general types of speech surveys are ordinarily used: (1) the questionnaire type, in which cases are found through information gathered from teachers or parents; (2) the personal interview type, in which each person being tested is interviewed by an examiner; and (3) a combination of questionnaire and personal interview.

To determine the speech survey methods now being used in public schools in the Middle West, specific questions concerning procedures in locating children with speech defects were sent to speech correctionists in Illinois, Kansas, Michigan, Minnesota, Missouri, Nebraska, Ohio, and Wisconsin. Of a total of 242 questionnaires sent out, 130, or 54%, were returned.

Of the correctionists responding to the questions, 75% indicated that they use the speech survey either alone or in combination with teacher referrals as a method of locating speech-handicapped children in their school systems; approximately 24% of the cor-

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rectionists reported that they depend on teacher referrals alone as a means of locating cases; the others indicated that they have no systematized method for locating pupils with speech defects.

Correctionists who use the speech survey method were asked to provide specific information on procedures followed in making the surveys. Answers to some of the questions and a review of additional conclusions are presented here.

Several questions asked in this investigation were concerned with the organization and administration of the speech survey. Most of the correctionists indicated that, in their school systems, speech surveys are made regularly. The surveys may be made twice a year, or more often, although some responses indicated that the surveys are made only once in every two or three years. Many correctionists stated that complete surveys are made only once, usually at the beginning of the speech correction program, with new students being tested upon registration and others being retested when specific need arises.

According to 70% of the responses, the speech correctionist alone is responsible for setting up and organizing the speech survey. About 15% of those answering said that the correctionist is responsible for organizing the survey but is assisted by the school principal or others in the school.

Other questions were concerned with the actual testing program. A total of 60% of the clinicians reporting said that they test the children individually in making the personal interview type of survey. Ten per cent indicated that the children are tested in small groups, these groups ranging in size from four to eight children. Some correctionists (17%) stated that they test all children first in small groups, then retest individually all doubtful or defective cases.

Testing material varied greatly, according to answers received. The group of correctionists was divided almost equally into those using published material and those using non-published or original material. Of those using published tests, 55% use the Bryngelson-Glaspey cards (**1**). Other published tests used include those by Stoddard (**3**) and Schoolfield (**2**). Most of those employing non-published or original material make use of conversation for testing, supplementing the informal conversational method with word lists, sentences, reading selections, pictures, and so on, depending upon the age and ability of the child.

Answers to a question on criteria used in deciding whether or not a child was deviant in speech to the point of needing remedial help did not provide the information that the investigator had hoped to obtain. Perhaps few clinicians can answer such a question definitely, since they have not determined the exact basis for rating students. The most frequently recurring comment on criteria was that the speech correctionist used her 'common sense,' her 'own judgment,' or her 'own discretion' in deciding whether the child's speech defect was serious enough to warrant corrective help. Many correctionists replied that whether or not the child should be given help depended not only upon the speech defect and its degree of severity, but also upon the case load of the clinician. Some correctionists reported that only the 'very severe' cases could be given help because of the lack of trained personnel in the school system. Others replied that even though the child, in the correctionist's opinion, needed help, there was such a long waiting list that the child was often passed by in the survey or referred to the classroom teacher for such help as that teacher could give.

The correctionists were asked to list the criteria they used in deciding whether a defect were serious enough to warrant speech correction. Typical

responses, taken directly from the questionnaire blanks and indicative of general trends at present, were as follows:

> Judgment and case load of speech correction teacher.
>
> With us it is not a question of seriousness, but a question of time.
>
> Subjective judgment of testers.
>
> We enroll a few mild cases who will profit most from extra help.
>
> Criteria can only be set up according to the individual. I use my own judgment.
>
> Age—chronological and mental—grade level, personality factor, severity of handicap, parents' attitude.

Undoubtedly the determination of criteria to be used in judging the speech of any student is one of the most difficult problems in organizing and conducting a speech survey. The correctionist should attempt to put evaluation of speech on as objective as possible a basis, particularly in the testing program.

One way to arrive at a more objective final decision is for the tester to rate each student. In other words, the examiner may decide, before the actual survey begins, on some definite groupings into which the students who are rated will be placed. She may decide what the criteria will be for placing students in these classifications, and then proceed to decide which of these groups will be excused from any work in correction, which are doubtful (to be rechecked), and which are in very definite need of remedial work. One method used by many schools is the three point scale. All students whose speech habits are found to be satisfactory upon the first examination are placed in group one. All students about whom the tester is doubtful or unsure are placed in group two. All students definitely in need of remedial help are placed in group three. Groups two and three are then retested and the correctionist makes her final decision in the disposition of the individual case.

Another question concerning the testing program asked for an estimate of the amount of time required to test each student. Answers, computed on a frequency distribution table, showed that correctionists who give only one test use nearly eight minutes for each child. Those who give two tests, a 'sweep' and a final, need an average of three minutes for the 'sweep' and sixteen minutes for the final test.

The amount of time needed for each pupil depends on the correctionist, the number of students, the amount of time allotted to the total testing program, the choice of testing material, the organization of the survey in terms of time-saving methods, and the age level of the students to be tested. Eight minutes seems to be an adequate amount of time to spend with each child, in a final test following a 'sweep' or in a single individual test, since the survey is designed to locate cases, not to provide therapy.

Additional conclusions drawn from the study were these:

1. A child needs to be included in a survey only once, preferably after he has reached the age at which he may be expected to have acquired all speech sounds. Since most children may be expected to have reached this level at the age of seven and a half years, the second grade is probably the best group to test regularly.

2. Teachers should notify the correctionist of any cases that need retesting and should refer to the correctionist any doubtful or defective cases that might have been missed in the survey.

3. If each child is given a 'sweep' test, following which the doubtful or defective cases are retested, the results are more likely to be reliable.

4. Methods used in a speech survey should, above all else, be adapted to the needs of the individual clinician, the children tested, the community, and the situation.

The speech survey is an essential part of the speech correctionist's work. With the increasing interest in speech

correction, many surveys are being planned or conducted and guidance in carrying them out efficiently is needed. New methods, new suggestions, and new ideas for conducting surveys are practical considerations for experimenters in the field of correction. Only through constant awareness of new ideas, together with a desire to continue improving former testing procedures, will the efficiency of speech survey methods be increased to any degree.

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LEAVE US NOT BE LOGOLATROUS!

It is necessary to begin by thinking a little about the nature of symbols . . . The symbol may be any familiar or unfamiliar word or any combination of words, as a phrase or a sentence, or it may be *x* or *y* or *z* or any other mark or combination of marks. The first thing to get clear is that a symbol symbolizes and that whatever symbolizes symbolizes something. To speak as if there could be a non-symbolizing symbol or as if there could be symbolizing without symbolizing anything is to utter sheer nonsense—nonsense of the sort that implicitly involves a contradiction in terms. One could as rationally speak of the possibility of remembering without remembering anything or of losing without losing anything or of eating without eating anything . . . .

Again, it is of the utmost critical importance to see clearly, and to keep steadily in mind, the fact that the symbolic character of a symbol is never intrinsic or inherent in it. Although it is true that anything whatever may be employed as a symbol, yet no thing ever is or can be a symbol except when and so long as it is employed as such. In other words, all the symbols that occur in human discourse are man-made—that is, man-chosen or man-invented for the purpose—and the meaning of any symbol is man-given, or man-assigned. If I be one of the legion who either in their theory deny the fact stated or in their practice ignore it and violate it, then I belong to the immense logolatrous class of mankind, I belong to the superstitious multitude of symbol-worshippers, I have not yet achieved emancipation from the ages-old world-wide tyranny of verbal magic.

From *Mathematics as a Culture Clue* by Cassius J. Keyser. (Scripta Mathmatics, 1947.) Pages 92-93.

JOURNAL OF SPEECH AND HEARING DISORDERS, 1948, **13**, 55-60

Ohio Looks Ahead In Speech And Hearing Therapy

Ruth Beckey Irwin*

OHIO looks forward to an expanding program in speech and hearing therapy. During October, 1945, a law became effective which extended educational services 'to all types of handicapped children.' Previously, only children with serious physical handicaps received any special state aid. Although many children had organic speech defects, no speech reeducation was subsidized by the state. The new law to be administered by the Division of Special Education, Department of Education, was interpreted to include children with all types of speech defects as well as children with slightly impaired hearing. Boards of Education were to be subsidized $1,000 for each speech and hearing therapist employed.

In 1947, The Ohio State Legislature again looked ahead with the passage of a law requiring the testing of the hearing of all children receiving school physical examinations. The State Department of Health was designated to set standards for testing procedures.

Ohio has been somewhat slow to recognize its responsibility to the children with speech defects and slight hearing impairments. According to Palmer's 'Analysis of Speech Correction Work by States (**11**),' Ohio ranked thirty-sixth among the states for its speech correction services in relation to the population based in income tax payments. However, Ohio ranks thirteenth in its service in relation to population, serving 76,000 children per unit of service. At least twenty states had statutes relative to the education of children with speech defects before Ohio passed such legislation (**2**). Approximately 15 states had some form of state legislation regarding audiometric testing before Ohio passed its hearing testing law (**1**).

According to many school surveys (**7**), ten per cent of the children may be expected to have speech defects. If this percentage figure is used, approximately 125,000 children in Ohio need speech correction services. At the present time, fewer than three thousand children, or only about two per cent of the speech handicapped children in Ohio, receive therapy.

If five per cent of the school age children in Ohio have impaired hearing, there are approximately 60,000 children in need of some form of hearing therapy. Estimating that ten to fifteen children in every one thousand need lip reading instruction, from 10,000 to 15,000 children in Ohio have been handicapped because of inadequate instruction in lip reading. This group of children does not include the deaf or seriously hard of hearing child who has fairly adequate opportunity for education as provided by the public school classes of the state school.

Ohio Surveys

Speech: Several fairly reliable speech surveys have been conducted in Ohio. In the Davis' study (**4**) of the Akron schools, 1937, six per cent of the children were found to be definitely handicapped in speech. Dr. Davis found that only four per cent of the children had 'perfect' speech.

In 1945, Elizabeth Ash Hawk (**6**)

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interviewed and diagnosed individually 1,200 children in the Fostoria schools. Of this group, 114 or 9.5 per cent of the children has speech defects. However, Dr. Hawk indicated that 44 of these children might have remained with the classroom teacher if the teacher had had some training in remedial work.

During the reorganization of the speech correction program, 1946, in Cleveland, ten representative schools were surveyed. The schools were chosen from various parts of the city and included all types of socio-economic groups. One school was predominately transient, located in what was commonly called the 'suitcase district.' Another school was largely Italian; however, the investigator indicated that she included no dialectal cases in her report.

Children in the kindergarten and the first six grades were tested individually by speech specialists. Approximately 6,000 children were included in the individual diagnostic survey. Seven specialists conducted the investigation. Cases were classified according to four headings: stuttering, articulation, aphasia, and voice. Ten per cent of the children were found to be defective in speech. This percentage did not include any child who could make sounds correctly after a few stimulations. Without the kindergarten children, 7.7 per cent of the children had speech defects.

Hearing: Practically no systematic audiometric testing has been done in the state outside a few of the large cities. In Cleveland, 148,148 children were tested between the years of 1935-1945. Of this group 7,336 or 5 per cent of the children were suspected cases of hearing impairment (**9**).

With the recent enactment of the hearing testing law, and the appointment of two hearing consultants in the State Health Department, many hearing conservation programs will probably be developed, resulting in new survey figures.

Facts About The State

In order to understand the problems connected with the development of a new program in any state, it is necessary to know something about the characteristics of that state.

Ohio is the fourth most thickly populated state in the union. Approximately seven million people live in Ohio. Of this group, over 1,250,000 are school children. The state may be divided into three sections: (1) the northern part with Cleveland as center; (2) the central part with Columbus as the focal point; and (3) the southern part with Cincinnati as the cultural center.

Over two thirds of the Ohioans live in cities, fifty or more of which range in population from 10,000 to 100,000 and ten of which range from 100,000 to a million in population. According to Gunther's recent book (**5**) 70 per cent of all industrial activity of the nation is performed in Ohio. Between the cities lie productive agricultural lands which yield two billion dollars worth of produce every year.

Ohio is a wealthy state. Although 55 millions per year are spent on schools, very little is spent on the special education of children with speech defects and slight hearing losses. In 1945, an appropriation of $234,000 was set aside for the special education of the mentally defective children (slow learners) as well as for the education of children with speech and hearing defects.

The five state-supported universities are so located geographically that courses, workshops, and meetings may be arranged for classroom teachers and nurses within short traveling distances.

Growth Of The Program

In the development of the speech and hearing program since the fall of 1945, Ohio has encountered similar problems to those outlined by Lassers (**10**). The addition of hearing therapy to the program complicated some of the problems. The following aspects of

the growth of the program will be discussed:

1. Finding qualified speech and hearing therapists.
2. Developing curriculum and clinical facilities in the colleges.
3. Training classroom teachers in speech.
4. Developing hearing conservation programs.
5. Educating communities to the needs of children with speech and hearing defects.

Finding qualified speech and hearing therapists.

Although money was appropriated for payments of subsidies to school communities, very few speech therapists were available for employment. At the time the state supervisor was appointed (fall of 1945) only seven full time speech therapists were employed. Not one of these persons taught lip reading, nor was lip reading taught in any school in Ohio except for the severely hard of hearing child who was placed in conservation of hearing centers or day classes for the deaf.

Few persons had trained in the fields of speech and hearing therapy, since until recently very limited opportunities existed in the public schools for therapists. The student interested in speech correction was usually required to take other related subjects or fields so as to qualify for a position.

In spite of the scarcity of special teachers and the late appointment of a state supervisor, 18 full-time therapists were employed by the end of the school year. By the fall of 1947, 38 therapists were working, many of whom were trained in both speech and hearing therapy.

Because of the inadequate supply of therapists, temporary certificates were issued to individuals having the fundamentals of speech correction, provided they had personal characteristics, incentives, and capabilities for pursuing the curriculum necessary to become a speech and hearing therapist. Temporary certification encouraged teachers to work toward validation of present teaching certificates, as well as encouraged superintendents to begin programs in speech and hearing therapy. However, the teacher, temporarily certificated was advised to do only a limited amount of speech correction until she was fully trained.

Considering that approximately 135,000 of Ohio's school children need speech correction or lip reading instruction, 38 therapists constitute only a very small beginning. From 500 to 1,000 therapists are needed to meet Ohio's speech and hearing needs adequately, depending on the speech education of classroom teachers and their ability to handle minor articulatory disorders.

In order to meet this problem of scarcity of special teachers, several steps have been taken. The first and major step was the encouragement of the universities within the state to develop curriculum, personnel, and physical facilities for training therapists. In order to secure teachers as soon as possible, classroom teachers were often encouraged to specialize. Only teachers having personal characteristics and background favorable for speech and hearing therapy were encouraged to specialize. In many cases, such a procedure is the only way some of the small towns and rural areas can hope to secure special teachers.

Developing curriculum and clinical facilities in the colleges.

As a first step toward the encouragement of the universities to establish speech and hearing curriculums, certification standards were developed early. Ohio is now among the 16 states requiring certification of speech therapists (3).

The present certification requirements include three grades of certificates: the four-year provisional, the eight-year provisional, and the per-

manent certificate. The four-year provisional special certificate in speech and hearing therapy requires 45 hours of special education, 30 of which are specifically speech and hearing courses. The eight-year professional certificate requires 18 semester hours of additional credit and evidence of 24 months of successful clinical experience in the field. The permanent certificate may be granted upon completion of an M. A. or Ph. D. degree plus 40 months of successful experience under the eight-year professional certificate.

Speech and hearing were combined in the certification plans in order to make possible the combination of services in one person. In many small communities with school populations of two thousand or less, one person may serve both the speech and hearing needs of the children fairly adequately if not over five per cent of the children need clinical speech correction and not over one per cent need lip reading instruction. In a small community, the speech and hearing therapist usually needs to be able to do audiometric testing as well as psychological testing. She also needs to be able to plan and initiate a program in teacher education of the regular classroom teachers so that speech improvement and the correction of minor articulatory disorders may be handled in the classroom as part of the regular work.

By the fall of 1947, Western Reserve University and Ohio State University had curriculums and training facilities leading to the doctoral degree in speech and hearing therapy. Kent State University, Bowling Green State University, and Ohio University have been training teachers to qualify for the special certificate in speech and hearing therapy as well as to offer the Master's degree in the field. Miami University is completing a curriculum for the training of special teachers. Many of the other universities and colleges of the state are offering excellent introductory courses in speech correction.

The universities have their problems too. Two of the state universities were unable to offer courses in hearing therapy at the beginning of the fall term, 1947, because qualified instructors could not be found. Funds have been inadequate for the purchase of nesessary clinical equipment. Probably the greatest problem, however, is the scarcity of students desiring to specialize in speech and hearing therapy. Colleges report that students are very much interested in specialization after becoming acquainted with the work, but that their introduction to speech correction is all too often delayed until the junior or senior years. This problem raises the following question: How may high school seniors be interested?

Superintendents and high school principals have suggested that printed pamphlets on vocational opportunities in speech and hearing therapy be made available for high school seniors; that conferences be held with Future Teacher Clubs; that posters be displayed. Service clubs and private agencies have expressed favorable reactions toward the idea of providing small grants and scholarships for students and teachers to take specialized training.

If present plans of the university speech directors materialize, the speech and hearing needs of Ohio's children will be adequately met.

Training classroom teachers in speech. Because little emphasis has been placed on speech in the public schools, few classroom teachers have had courses in speech. Unless the classroom teacher knows the fundamentals of speech correction and speech improvement, the clinician's case load may easily include ten per cent of the children. Consequently, as classroom teachers are educated to assume some of the responsibilities of speech re-education, so will the speech therapist be able to serve a larger school population than otherwise. Moreover, the classroom teacher is in an excellent position to help children daily with

speech. Since practically all communication is in the spoken form, and approximately only five per cent of the population has good speech, speech improvement should be an integral part of the regular school curriculum.

In order to recognize speech defects, to correct minor articulatory defects and to conduct speech improvement, the classroom teacher should have courses in personality adjustment, voice and diction, and speech correction. Several teacher education universities in Ohio already require all prospective teachers to pass a speech proficiency test. If the student does not have satisfactory speech, she is advised or required to take a course in voice and diction. Trends in Ohio indicate that every prospective teacher will soon be required to take a course to improve her own speech and voice as well as to understand how to improve the speech of the children in her classroom. Such a proposed course as 'Better Speech for the Classroom Child,' as outlined by the Oregon Division of Special Education, should be a part of every elementary teacher's education (8).

It is possible for prospective teachers to include some of the suggested education indicated above, but for those teachers now in service, there may be no special incentive to take additional work. In order that a well-coordinated speech program be developed in any school system, it may be necessary to establish an in-service training course in the form of workshop meetings, so that each teacher in the system will have an opportunity to learn how she may assist with the total speech program.

To meet the problem of the lack of speech training among the classroom teachers, meetings, demonstration clinics, and short courses were held. Bulletins and forms were issued. Preliminary surveys made by the classroom teacher on especially prepared forms were in themselves an educational procedure. In school districts where a therapist was employed, series of inservice training meetings were held. During the summer of 1947, three one-week short courses in speech and hearing therapy were held at three of the state universities. Two of the workshop periods were developed to include three phases: speech correction of minor speech disorders, speech improvement, and audiometric testing. Classes were held from 8 until 4. Over one hundred classroom teachers and nurses attended these workshops. Such short courses will be repeated next summer at the various universities.

Developing hearing conservation programs.

The interpretation of the law included services to the child with slight hearing impairment. However, lip reading instruction necessitated finding hard of hearing children to instruct. It was comparatively easy to find children with serious hearing impairments, but to find children with losses of from 20 to 40 db presented quite another problem.

Such a need gave rise to the development of hearing conservation programs in communities where speech and hearing therapists were employed. To develop further interest in hearing, one-day institutes were held at six universities of the state. Over 300 public school nurses and other school personnel attended. With the recent passage of the hearing testing law, more children will probably be found than can be given special education. However, plans include special instruction to classroom teachers and parents to do what they can until a therapist can be employed to give formal lip reading and speech instruction.

Educating communities to the needs of children with speech and hearing defects.

Many communities have no awareness whatsoever of the speech and hearing needs of school children. One progressive superintendent was known

to have said, 'I've never heard of speech defects.' Another superintendent stated that clinical speech correction had no place in the public schools. In Ohio, where the program is comparatively new and few therapists are available, little necessity exists for encouraging indifferent school administrators.

Many school officials are already interested in beginning speech and hearing therapy as soon as a therapist may be found. Others want to employ therapists but as yet have not been able to include the cost of the additional staff member. The $1,000 subsidy allowance per teacher unit is insufficient if the school has no additional funds. However, it is believed that, when the needs are fully realized, money will be made available.

Although numerous surveys have been made indicating that children are in need of speech correction and lip reading, many school administrators are yet unaware of any such need. Superintendents and school boards want to know their own specific problems. In order to satisfy boards of education, certain preliminary case-finding programs may be necessary before a speech and hearing therapist will be considered a necessary staff member.

An attempt has been made to outline the growth of speech and hearing therapy in Ohio during the last two years. Many problems evolved as colleges developed training facilities; as public schools began programs; and as communities sought to ascertain the speech and hearing needs of their children. Throughout the development of the state program, public and private agencies have coordinated their efforts. The State Departments of Education, Health, and Welfare have worked closely in the development of the Hearing Conservation program. The Ohio Society for Crippled Children has extended help in the form of grants to teachers attending short courses in speech and hearing therapy and in the form of audiometers and sound recorders for speech and hearing therapists. The Ohio Association of Speech and Hearing Therapy, two years old in March, 1948, has been a very definite factor in the growth of the state program. With the coordinated efforts of everyone, Ohio looks forward to an expanding program which will meet the needs of many of the children in the state.

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JOURNAL OF SPEECH AND HEARING DISORDERS, 1948, **13**, 61-66

Make Mother A Clinician

Herold Lillywhite*

FOR YEARS speech pathologists in clinics all over the country have been baffled by the problem of how to give enough time for the proper rehabilitation of the aphasic, the cerebral palsied, and the child with delayed speech due to other causes. Most clinics are overcrowded and handicapped by lack of personnel and especially by a lack of clinicians trained to handle such serious disorders as those mentioned above. These cases are so few and take such a great amount of time that directors of clinics have felt that they are not justified in concentrating so much of their limited time and personnel on them when there are so many others who can be rehabilitated more quickly and more completely.

The result has been that all too often the spastic, the aphasic, and the child with delayed speech have been examined, diagnosed, prognosed, the parents have been advised, and the case has been dismissed. The parents then resume the search for someone who will really undertake the rehabilitation of the child. Eventually they do one of two things. Either they follow the all too frequent advice of a psychiatrist or a family doctor and have the child committed to a mental institution, or they enroll the child in one of the many commercial 'schools of speech,' paying exorbitant prices and more often than not obtaining negligible results.

Many reliable speech correction clinics may be justified in deciding against spending the necessary time to completely rehabilitate these cases. However, we are not justified in abandoning them to the mercy of the 'quacks' or to the unconsidered judgements of medical men. We have an obligation to do something more than we have been doing for these cases.

In an outstanding study, Kenneth Scott Wood (**1**) pointed out the significance of the influence of parents in the causes and treatment of speech defects, stressing especially the necessity for parental cooperation and education as basic for the rehabilitation of children with defective speech. Proceeding in the direction indicated by Wood, we present a few suggestions that may aid in the more complete rehabilitation of the more seriously handicapped speech defectives. The approach is not new, but heretofore it has not been widely exploited.

It is probably true that, for the majority of aphasics, spastics, and delayed speech cases, only the mothers or someone else in the immediate family can give enough time for adequate rehabilitation. The belief that the mother is capable of treating the child so severely handicapped will immediately be questioned by many speech pathologists. In expectation of this reaction it must be pointed out here that not all mothers are capable of being trained to undertake this task and none can do so without much training and guidance. But experience is indicating that many more mothers can be trained for this task than has been thought possible.

I

The Whittier College Speech Clinic has had the good fortune to secure the services of a mother who has been able to rehabilitate her own aphasic

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child and who, fortunately, also has sufficient training to qualify her for a position on the clinic staff. Her story is an interesting one.

Mrs. M. is the mother of three children. The second child, named Pat, was born in a rather unusual manner, sustaining a brain injury. Early in life he showed all the symptoms of the brain-injured child, with the exception of the development of unusual physical coordination up to the age of four and a half years. At that time he underwent something of a general physical deterioration, losing, almost overnight, his fine coordination to the point of being unable to throw a ball or to run without falling. At the same time he changed sidedness. Until that time he had been predominantly right-handed. Within three weeks he was completely left-handed and has remained so.

Although the boy showed the symptoms of brain injury, the parents did not recognize them until after a doctor's diagnosis when the boy was about four and a half years old. It was about a year previous to this time that Mrs. M. began going from one college or university to another, then from one commercial institution to another, and finally from one psychiatrist to another. The college and university clinics gave her no assistance whatever. Many of the commercial schools took her money and after a few weeks dismissed the boy with the explanation that nothing could be done. The psychiatrists agreed unanimously that her son should be put away in a mental institution 'for the welfare of the rest of the family,' and that the mother should not attempt treatment.

Mrs. M. is a rather obstinate person. She refused to believe that nothing could be done, but she did reach the conclusion that if anything were to be done she would have to do it herself. She set to work reading everything she could find on the subject of the brain-injured child. It wasn't long before she arrived at another conclusion: that almost nothing was known about the rehabilitation of this type of defective. Since that time some of the discoveries made in the rehabilitation of war-injured servicemen have added much to this field of knowledge, but this was not available to her.

Mrs. M. had been a speech major in her undergraduate days and knew something of the development of speech and the speech mechanism. With this inadequate background and with the few suggestions she could get from her reading, she set to work to rehabilitate her son.

Mrs. M. spent three months teaching the first symbol-experience-association. This was the meaning of the color and the symbol 'yellow.' Once the association was finally made, everything with the color of yellow became a 'yellow.' A field of dandelions was a 'yellow.' This primitive association persisted for several months, but within one week after Pat first learned the meaning of yellow he learned the meanings of eight different colors.

About four months after this first association the boy had the general physical deterioration and change of sidedness mentioned above. Apparently the unimpaired side of the brain was taking over. From there on the process was one of increasing the field of associations. It was slow, painstaking, and often heart-breaking work. No institution would have given that much time or patience to the problem without prohibitive cost.

Now, at the age of seven and a half, Mrs. M.'s son is writing, speaking and indentifying many word symbols. His mental age is about six. This represents an increase of three and a half years since the age of five. It is evident that he is progressing more rapidly than the normal child, only on a delayed age level. His progress is so satisfactory at present that it is expected he will be able to enroll in public school in another year.

II

It is readily admitted that Mrs. M. is an unusual mother, but there are many other unusual mothers. Since her association with our clinic. Mrs. M. has undertaken the training of three other mothers of aphasic children.

The first mother has a son eight years old who has never spoken and who had never made the association of any visual or auditory symbol with its object until just recently. After working with the mother approximately five months there is a definite indication of progress being made with the child. He has made the symbol associations of his mother's nose, arm, and foot. This is the beginning; now his rehabilitation has an excellent chance of being accomplished. It is made possible because the mother can spend the time necessary to give him the training needed. She now comes to the clinic once a week for counseling and guidance and to report on progress.

The second mother has not been with us so long and results are not as apparent in her case. She is able to bring her son to us three times a week. While he is receiving some assistance in the clinic, the training and guidance being given the mother is definitely the deciding factor in her son's rehabilitation.

The third mother, whose son's health will not allow him to come to the clinic, is making weekly visits for the purpose of preparing herself to deal with the case. Results are not evident here as yet. Another mother, whose son does not speak at the age of six, a delay due to early illness, is bringing her child three days a week to the clinic, but the instruction she is receiving makes her work at home with her son much more significant than the time he spends in the clinic.

A fifth mother should be mentioned to show why an occasional mother cannot be trained for this task. She had an eight year old son who had no speech. The attempt to instruct and guide this mother was a complete failure. She suffered from a slight hearing loss, which became almost complete deafness whenever an interview approached pertinent factors with respect to the rehabilitation of her son. Apparently, she suffered from serious guilt complexes and needed psychiatric help herself. After considerable effort, both the mother and the child were referred to a psychiatrist. It is doubtful that this parent could ever be trained to aid the rehabilitation of her son. In this case a complete separation would probably be the better solution, at least for the time being.

There are other reasons why some mothers cannot be trained to work effectively with the speech defective child. Some of these are: employment outside of the home, poor health, unwillingness to cooperate, gross ignorance, or lack of sufficient intelligence to be trained. But aside from personal inadequacy, there are few really serious reasons to prevent such a program.

It is indicated by our experience that the mother with a fairly large family has an advantage over the mother of an only child. In the first place, babies and younger children in the home offer much more adequate speech stimulation than do adults. The baby's babbling, cooing, and gurgling may be exactly the kind of stimulation the non-speaking older child needs. Under direction this source of stimulation can be used effectively. The child who is near the developmental age of the defective, yet has learned to speak, uses a limited vocabulary featuring constant repetition of the same words and sounds at a developmental level that may be much nearer that of the defective child than an adult can approach.

The mother who is alone with her non-speaking child may have more time to devote to him, but she lacks the assistance of other children. She may do a fine imitation of babbling, cooing, nonsense, sounds, or single-

word sentences, but she is imitating rather than communicating in the primitive manner that children do.

One may well ask where the mother of a large family can find the necessary time to devote to the speech defective child. If there are older children they can take over many of the mother's duties and relieve her for this work. It is surprising how many mothers need to be taught to develop this kind of a family pattern, but in many cases it is being done to the advantage of all concerned.

III

Not all of the general instructions and specific procedures given to the mothers who are being trained can be listed here, but some of these can be suggested. Probably the single most important basic concept that the mother must be helped to grasp and to make a part of her is that, for the time being, *nothing is as important as the child she is attempting to retrain.* The brain-injured child or the child with delayed speech has so little concentration and is so rarely properly motivated for speech development that the mother cannot set aside a certain time each day for speech work and expect to succeed. Too often the child will be completely uncooperative and unteachable at this specific period.

The mother must not only be alert to discover those times when the child is interested in communicating by sound, but she must be willing to leave whatever she is doing in order to seize the opportunity at the time it is present and help the child as long as he is receptive to her teaching. In other words she must be willing to pull the plug of the iron or the vacuum cleaner, turn off the gas under the steak she is frying, hang up on her lengthy telephone conversation, or leave her husband to finish the dishes if the opportunity presents itself for the teaching of sound or speech to her child. Obviously there are many great difficulties attached to this procedure, but mothers have reported a much more relaxed, if less well-ordered household, under such a regime.

Another concept that the mother must grasp is that she is a clinician, for the time being, rather than a parent. Being a clinician, she will keep the worry, the concern, and the desperation out of her face and her voice rather than letting them block any spontaneous response on the part of the child as so often happens. Because she is a clinician rather than a parent, the mother will change the pattern of rewards and punishments for the child. They will be administered on the basis of accomplishment and in an impersonal manner rather than on the usual unstable emotional parent-child relationship. Such an attitude is very difficult for most mothers to adopt, but those that have been successful report vastly improved mental health for themselves and their entire families.

The mother must further be taught the important fact that her child is not mentally defective though he may be mentally delayed, and that this condition probably will correct itself with the acquisition of language. She must grasp the concept that chronological age means little in her handling of this child. He cannot be expected to receive stimuli on a level consonant with his chronological age, neither can he be expected to respond at this advanced age level. She must be willing to accept the fact that he may be delayed from one to five years mentally, in his language development, and sometimes physically. And she must be shown that his development, when it begins, is to be considered in terms of the development of the normal child whose chronological age is that of the delayed age of the defective child.

IV

With these important concepts as a basis, the specific speech development techniques are worked out according to the child and the stage of his language development. If he has speech,

the long difficult first step, that of teaching object-symbol-associations, the names of things, is undertaken. The mother is taught to use all of the avenues of stimulation: visual, auditory, kinesthetic, and those peculiarly over-developed senses of smell, taste, touch, color, etc. that so many defectives of this type have developed. She is taught the highly important technique of auditory stimulation and the reason behind its importance. With this she is shown that the child need not always respond or even indicate that he is being stimulated in order for the learning process to be taking place within him.

It is almost impossible to describe the process by which the first object-symbol-association is taught. It is important that the mother realize that this first step must be built upon some basic need, interest, or sensitivity in the child. An experience has meaning only when it can be connected with other experiences within the organism. Obviously the first symbol-experience must be connected with non-symbol experiences. These will generally be the basic biological drives or inherent sensitivities. In the case of Pat, Mrs. M. discovered that he was peculiarly sensitive to color (perhaps an inherent sensitivity in all animals) so she began to work with colors. She reports hours of thumbing through a book which had a predominantly black and yellow pattern, repeating 'yellow' incessantly as she pointed to the color or as she could get her son to point to it. She reports using every occasion any place at any time to call his attention to bright colors and to stimulate him with the sound as she did so. She encouraged him to see, to feel, to smell, to taste, and to touch the object that had color as she poured the sound of its name into his ear. After the first association was made others followed rapidly.

After the names of things begin to have meaning for the child, words of action are undertaken. Here it is important to make the mother understand that visual stimulation is highly important along with the auditory and whatever kind of stimulation she may be using. She teaches the word 'walk' by walking vigorously within the child's range of vision as she repeats the word over and over again, or as she makes more complicated communication with the word by saying, 'See Mother walk,' 'See baby walk,' 'We walk,' 'You walk,' 'I walk,' etc. It has been found advantageous to use action words in pairs, such as 'push-pull,' 'run-walk,' 'go-come,' etc., vigorously demonstrating and helping the child to perform the actions as he is being stimulated with their sounds.

With the action-word development stage there is necessity that the mother understand the need for proper motivation for speech, that she learn to create in the child a need for speech, and that she demand an attempt at speech whenever a want is to be satisfied. With this procedure she must learn how far she can go in creating the need and where she must stop her demands for speech attempts in order to avoid irritation and negativism.

V

To aid in the education of the mother, carefully selected reading material is given her to study and read as part of her preparation. It would be useless to list selected readings that may be used because they must be so carefully chosen according to the individual. Seldom is an entire book assigned. Even articles are edited and assigned for specific purposes. The competent speech correctionist will know what is available and what the mother can read and understand. It is suggested that too little reading matter may be better than too much or indiscriminate assignments. It is easy to confuse or discourage the mother by unwise reading assignments. It is well too, to guard against over-dependence upon what she reads in popular magazines concerning the child's type of defect. These articles are seldom reli-

able, and often hold out false hopes of miraculous and quick cures.

The time needed for training a mother to be effective in helping her speech defective child varies greatly. We see some mothers three times a week and others only once a week. As the mother gains understanding and competence she reports to the clinic less often. It is expected that by the end of the first year most of the mothers will need to report only when they have particular problems that require our assistance and for regular follow-up interviews.

It is difficult to be more specific as to techniques and procedures for training the mother to become a clinician, though there are many more. Each case is so different that procedures must be worked out according to the need, using the general principles and suggestions outlined above.

It is realized that others have long been training mothers to help with the rehabilitation of handicapped children, but speech clinics have generally excluded the mothers from extensive participation in the rehabilitation of the more severe types of cases. If even one in five could be trained to help save an otherwise doomed child, it would be well worth the effort. Our inconclusive experience suggests that perhaps four out of five can be so used. It is evident that they must be carefully selected, trained, guided, and supervised, but it can be done. The possibilities suggest the value of further experimentation along these lines.

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HALF A LOAF IS BETTER THAN LOAFING

The time will perhaps come when the irresponsible idealist will be regarded no more highly than other vendors of bogus gold bricks. Today idealists go up and down the land with offerings that are as fraudulent as any patent medicine or snake oil that was ever retailed. . . .

The function and power of ideals in human affairs has nowhere been questioned. Indeed, the present essay is itself idealistic. But scientists do not advance counsels of perfection nor advocate unattainable goals. Scientific validity is itself a matter of degree and, in new fields especially, it is sometimes difficult to distinguish the scientist from the quack. The fact remains that we have adopted in some fields fairly reliable criteria to distinguish science from nonscience. The social sciences could greatly assist in perfecting these criteria. There is, unfortunately, in science, as elsewhere, a type of idealism closely resembling that criticized above. It demands that social scientists present here and now formulations comparable in prescision and predictive power to those of the advanced sciences. This we cannot be expected to do at present. We have rather taken the position that in science and idealism half a loaf is better than loafing, and that the road of science is a long, rough road. Ideals we must have. Let us distinguish between ideals and illusions.

From *Can Science Save Us?* by George A. Lundberg. (Longmans, Green, 1947.) Pages 12-13.

JOURNAL OF SPEECH AND HEARING DISORDERS, 1948, **13**, 67-70

The Speech Correctionist On The Cerebral Palsy Team

John C. Snidecor*

ABOVE AND BEYOND sheer mechanics, speech is a warm, revealing act directed toward others about ourselves. Through speech we relate that which is inside to that which is outside.

Oral communication as a means of self expression in social situations is even more important to the cerebral palsied child than it is to the normal child. Obviously, the cerebral palsied child is limited in expression through games, athletics, dancing, and hobbies requiring finely coordinated movements. Speech, when and if the cerebral palsied child may acquire it with even moderate skill, becomes a means of self expression, the value of which cannot be overestimated.

The cerebral palsied child as a speech defective presents, then, a complex individual with impaired motor-sensory equipment, whose desire and need for intelligible speech is even greater than that found in the normal child. From 60% to 70% of these children need speech re-education. Perhaps 10% of this group receive the extended training necessary for the development of minimum speech intelligibility.

I

Speech corrective work with cerebral palsied children should be approached with a great deal of humility for at least three reasons:

1. The palsied child may present complications above and beyond the articulatory deviations commonly associated with cerebral palsy. The child as we see him may be aphasic, hard of hearing, a stutterer, or be defective in vision as a result of the injury which caused the palsy or as a result of later injuries or disease. All of these added complications should be considered by a suitable team consisting of at least a physician, a psychologist, a physical therapist, a teacher, and a speech correctionist, prior to and during speech training.

2. We have almost no objective research related to speech training with cerebral palsied children. We carry over on empirical bases much from our knowledge of working with other articulatory, phonotory, and rhythm disorders. We know, for example, that the normal speech-retarded child learns under a regimen of ample stimulation with speech sounds, and motivation. A considerable amount of tension exists, and should exist in such a learning situation. These assumptions immediately break down when we work with the athetoid child. Given more stimulation and motivation than he can react to, he delivers, not well-formed speech, but an 'explosion' almost as intense as that set off by the slammed door or the photographer's flash bulb. Thus, by using techniques suitable with other speech defectives, we may defeat our purpose in working with athetoids.

3. As suggested above, each category of cerebral palsy requires a different approach, and each child within that category requires modifications in technique. Whereas the athetoid

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child may not benefit by a high degree of straightforward stimulation and motivation, the ataxic child usually reacts favorably to such an approach, especially if the speech defect is slight. Generalizations are dangerous, but usually the spastic child falls between the athetoid and the ataxic as regards stimulation and motivation.

In brief, the cerebral palsied child presents a more complicated problem than most speech defectives because we must be alert to concomitant effects, such as articulation defects plus stuttering plus aphasia. Injury of the lower motor neurons does not exclude the possibility of injury elsewhere. The speech pattern of one cerebral palsied child may cause one to reflect again upon the theories of Head, Travis, and others.

We have very little research or even knowledge based upon logic which applies directly to speech work with cerebral palsied children. Finally, based upon what knowledge we have, the approach to each child must be carefully formulated in terms of the type of cerebral palsy and the particular child we have in front of us.

II

After the brief analysis and words of caution stated above, it is necessary and desirable to generalize and speak of the work done at Hillside House in direct practical terms. Some of these ideas are those of the author and no one else should be blamed if they seem impractical.

1. *Relaxation* is the cornerstone of all of our speech work. Ideally, the child should be given speech training following a session with the physical therapist. When this is not possible, the speech correctionist will relax the child in keeping with instructions from the physical therapist, or by techniques which in no way conflict with proper medical or physical therapy practices for that child. In practically all cases, the child will begin his work in a reclining position. 'Work' is hardly the word, as the attitude 'easy does it' is basic to all speech training with cerebral palsied children. Time must be allowed for spasms to subside. With relatively mature children, this is a suitable period for reviewing the aims and objectives of the last lesson, and for previewing those for the day. With young children, pleasant, easy going chatter about the trip out to the school, or about some coming event may reduce the waiting time.

2. *Easy, on-flowing vocalization* under relaxation is the next step. This varies with the child. With an athetoid child this may consist of easy repetition of a syllable such as 'pa-pa-pa-pa.' Quiet emphasis is given to 'speaking with the mouth only.' The child will frequently catch himself making extraneous movements. If good rapport and attitudes have been established, he will laugh at his insight and willingly begin over again.

The number of syllables made without extraneous movement should be recorded. When progress is noticed, the child should be so informed. Care must be exercised to insure that the child does not develop tension and anxiety as he gradually achieves success.

With the spastic child, one will more frequently work toward vocalization of a single vowel sound, for example, 'ah——,' than with repeated syllables. When this technique is used, a stopwatch serves to time the period of extended vocalization. The time is recorded and improvement noted in the record and to the child.

3. *Exercise on individual speech sounds* follows directly after step two. Tongue and lip exercises are deemphasized. In the opinion of the writer, the peripheral speech mechanism can be exercised directly with speech sounds without recourse to the usual repetoire of artificial exercises so often proposed. To adapt this point of view requires some ingenuity in developing drills to the end of exaggerating sufficiently and repeating frequently speech sounds.

By way of example, the vowel diagram presents a perfect base for exercise and speech sound development. The vowel diagram represents a visual aid which most children can understand and use, with the speech correctionist's aid, in self instruction. With older children the phonetic symbols may be used to advantage. Further, as the child 'goes around the diagram' he approaches kinesthetically insight as to minor differences in vowel production. Specifically, we may begin on the exercise basis, going from the extreme of 'ēē' to 'ōō' to 'ah.' The child looks at a large vowel diagram during the exercise. Then, the child may work from 'ēē' to 'ĭ' to 'eh' with the aim in mind of producing 'ĭ' as an intermediate position vowel which to date he has not produced. Kinesthetic and visual assistance are added to the speech sound stimulation normally used by the speech correctionist. Lip movements will be copied, or an attempt will be made to copy them if the child's eyes are directed to the lips of the correctionist.

Consonant sounds may be developed in much the same way as vowel sounds. In working towards the production of 'k,' it may be necessary to work from 'th' (unvoiced) to 't' to 'k.' Later the transition is made to 'thin,' 'tin,' 'kin.'

4. *Simple non-sense syllables and words* are next in order, with emphasis on combining consonants that are easy for the child with the vowels in the diagram. The 'ēē,' 'ōō,' 'ah' become 'bee,' 'boo,' 'bah,' and later 'beeb,' 'boob,' 'bŏb.' Following the use of extremes in the diagram, the consonants may be combined with closely related sounds (phonemes) as in 'tea,' 'tĭ,' 'tay,' 'teh,' 'ta,' to develop a sense of the fine differences in speech sound production.

5. *More difficult words and sentences* spoken slowly constitute the next step in development. 'Easy does it' is still the basis for work. The cerebral palsied child should always speak slowly during training, and in most cases should be taught that he must speak slowly after the training period is completed. Intelligibility is a primary goal. Better to always speak slowly than to be misunderstood. With most children 140 to 145 words per minute may well be considered a maximum even in the later stages of training.

6. *Transfer of learning* must be accomplished before the speech correctionist's job is completed. Up to this point all work has been accomplished during relaxation, usually with the child reclining. In most cases, a minimum of one full year of speech training will have been given. In some cases, many years of work will have been necessary.

Now the child will be taught to speak, still relaxed, in a sitting, then in a standing position. This period, during which learning is transferred, is critical. Much of what can be accomplished is a direct result of the effects of medical attention, physical therapy, and occupational therapy.

7. *The mental hygiene aspects* of speech correction should be kept in mind at all times. Any individual who is seriously handicapped in oral communication achieves great satisfaction from improvement therein. Even 'h' for 'yes,' 'abee' for 'maybe' adds significantly to refinement of emotional expression. For this reason, the writer believes that all cerebral palsied children capable of producing speech sounds should have at least a minimum of speech training. Even the cases with little hope are 'in the group' when they receive training of any kind.

Frequently children gain the impression that they will learn to speak effectively in a short period of time. Emphasis must be placed upon the pleasure arising from the task, and upon small gains, rather than upon false hopes arising from stating periods that will elapse before improvement can be shown.

Good rapport usually develops easily and is to be encouraged. The cerebral palsied child needs warmth and affection and it need not be denied him. However, the speech correctionist often spends so much time with a child that a rather strong 'transference' effect may inevitably develop, as it may with the child and the physical therapist and the occupational therapist. When 'transference' develops, it must be attenuated, especially when the worker plans to leave the child. When a psychiatrist is a member of the team, he may contribute a great deal by directing and controlling all of the mental hygiene aspects of the training program.

8. *Finally, methods, set-backs, and improvements* should be recorded in writing, and, when practicable, on phonograph recordings. Workers come and go, but the child frequently remains. In order to give continuity to the training program, the speech correctionist must know both the methods and accomplishments of his predecessor.

None of the objectives outlined above need conflict with those of the physician, the psychologist, the teacher, the physical therapist, the occupational therapist, or other members of the 'cerebral palsy team.' When specific methods may not be suitable for a given individual, the program for that child must be rationalized through conferences with the team as a whole.

WHAT IS THE 'UNSCIENTIFIC' METHOD?

Can *science* tell man what direction he should go? Yes, if man will tell scientists where he wants to go. *Should* man then do what he collectively *wants* to do? Assuredly, unless you wish to set up a higher source of wisdom and authority than man's collective experience through the ages, interpreted and supplemented by the reliable prediction of scientists as to the costs and consequences of different possible courses of action. To declare under these circumstances that man *ought to want* something else than what he does want is merely a semantic trick by which the speakers seek to invoke "ethical principles" derived from some source outside of nature, in support of what he himself wants man to want. This is also the answer to those who claim that the universities are shirking their responsibility if they do not tell man what he should want. Those who presume to set up such higher authority above and beyond the most competent appraisal of man's experience should equip themselves with more convincing credentials than they now possess, if they wish to avoid the suspicion that they are merely setting up themselves as the authority which they claim to derive from authorities outside of nature or of experience.

From *Can Science Save Us?* by George A. Lundberg. (Longmans, Green, 1947.) Page 101.

JOURNAL OF SPEECH AND HEARING DISORDERS, 1948, **13**, 71-73

Practical Techniques In Speech Training For Cleft Palate Cases

Charlotte G. Wells*

IN remedial work with cleft palate cases, the actual speech training provided is often no more important than the opportunities given the case to develop in personality, in adjustment to his problem, and in social confidence and poise. However, certain specific remedial techniques may be used to advantage with the cleft palate case to accomplish velar-pharyngeal port closure and control, to improve the production of speech sounds, and to bring about more intelligible sequential speech. These techniques vary with the age, intelligence, and personality of the individual receiving the speech training, with the circumstances under which remediation is undertaken, and with the severity of the problem.

This consideration of practical methods to be used with individuals or in group work emphasizes only one of the several steps usually taken in providing speech training for the cleft palate case. The transition to sequential speech and the achievement of correct vowel and consonant sounds follow logically the work on velar-pharyngeal port closure. Control of the port must be achieved if the cleft palate case is to rid himself of characteristic nasality and if he is to build up sufficient pressure for the production of plosives and fricatives. Since this control of the port is of primary importance, an accumulation of practical techniques for velar-pharyngeal control is of value to the correctionist and to the supervisor teaching techniques to student clinicians.

Let us, then, consider only one phase of cleft palate speech training and remember that speech training is only one phase of the total program that must be planned for any cleft palate case. What are some of the procedures that will help the cleft palate child or adult to acquire velar control, nasopharyngeal port closure, and, hence, proper direction and resonance of sounds to use in speech?

Let me suggest a sequence for velar-pharyngeal port closure, to be modified for each case, but recommended for consideration because it has been proven in practice, because it is adaptable to various age levels, and because it can be used with individuals or with groups. This sequence involves identification of the area involved, development of skill in movement control, and ability to use the mechanism so trained.

First, the area and parts involved should be identified for the case. Technical terminology need not be used, but the cleft palate case must be aware that he is attempting to gain control of the action of the velar-pharyngeal area. This is true whether the control be of a repaired palate or of an insufficient palate supplemented by an obturator.

Our chief concern in this discussion will be with the repaired palate and the techniques suggested will be concerned with the training of that 'new' part—'new' to the cleft palate case in the sense that he has not had it before and thus has not learned, instinctively,

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to use it. Use the term 'gate' instead of naso-pharnygeal port if you wish. Speak of 'the roof of the mouth' instead of the palate. Avoid reference to sphincteric closure, specific muscles of the palate, or other parts by their technical names, but build in the case an awareness of the area in which he is trying to develop control and activity. Achieve this awareness by having him observe his own mouth and those of others—both those with cleft palates and those with normal mouth structures. Use mirror drill and help him to concentrate on the area by holding the mirror so that he looks only at the mouth. If he can see his own eyes, he will tend to keep eye-contact with himself and will have difficulty in concentrating on the palate area. A small flashlight for him to use, as well as one for the clinician, will make examination of the velar area easier—and more interesting to children. With the approval of the surgeon, and with proper precautions for small children, contact of the palate with a tongue blade will establish, through tactile sensation, a better awareness of the area. The use of swab sticks tipped with cotton may also be of value here. 'Tickling' the soft palate may, in some cases, result in a retraction of the palate and in a beginning of awareness of palate movement. Let the tongue help in identification, too, by brushing the hard palate and pushing against the soft palate. The tongue, as well as the palate, will profit by this exercise.

Voluntary movement of the palate —again with observation in a mirror —is a second step in the general procedure for developing naso-pharyngeal port control. The use of the sound 'ah,' not necessarily as a sound, but as a position plus phonation, will be helpful in getting the tongue out of the way for this observation. Thinking 'ah' will, after a time, bring about palate movement without phonation. Here the idea of opening and closing a gate will clarify the objective for a child and will provide terms for discussing the results of the velar-pharyngeal port movement thus achieved. The use of varied respiration sequences will be of value in velar control, too. Have the case breathe in through the mouth, out through the nose. Have him breathe in through the nose, out through the mouth. Have him breathe in through the mouth, out through the mouth, and in and out through the nose. Check these 'directional breathing' exercises with the fingers at the nose and mouth to determine the actual air-stream direction and control. The use of a syringe bulb to direct a stream of air against the palate may be helpful, not only in identification and building of sensation, but also in developing awareness of movement. Have the case try to move the palate away from the stream of air. The use of an air-stream rather than a stream of water is obviously simpler, although the water-stream might also be used in some instances. Voluntary palate movement can be achieved, too, by practice on command and with mirror observation. Air-pressure against the palate may be used, but care should be taken to avoid too great pressure. Finger-pushing against the puffed cheek—one cheek at a time—will make for air-massage of the palate and yet will prevent undue pressure of air up the Eustachian tube. This air-massage will serve also as a check on the efficiency of port action. If air can be retained in the mouth under finger pressure, the port is functioning for closure. Use of vowel sounds and the beginning of work on plosives follows logically at this point, correlating the several steps mentioned earlier in the over-all plan for training in cleft palate cases.

When the area has been indentified and some control of the naso-pharyngeal port has been achieved—a process that will take considerably more time than this description of the procedure has taken—blowing drills may be begun as a third step in the develop-

ment of gate control[1]. A few practical suggestions for blowing drills may prove helpful. Empty spools may be used for bubble pipes. They work well, are easily replaced and cleaned, and provide a good flat surface for pressure against a repaired cleft lip. What we have called 'huffer-puffers' are useful, too. They may be made from match box tops and bits of paper with little trouble and provide for checking direction of air stream from nose or mouth. A straw in a glass of water keeps a small child entertained blowing bubbles for some time and provides good blowing drill. Blowing with a purpose, however simple the purpose may be, is better than blowing just for the sake of blowing, so have the child blow to dry nail polish, to cool hands in warm weather, to outline his hand with his breath, to send a piece of paper or a ping-pong ball to a specific goal, to learn to play a selection on a wind instrument, or to provide 'sound effects' for a story about a breeze, a boat on a lake, or a hurricane. All blowing drills should be carefully checked to avoid dizziness, to correlate with previous skills in palate movement and control, and to lead to the use of speech sounds.

Throughout all work on velar-pharyngeal port identification, movement, control, and use, ear-training should be carried on as an integral part of the speech work. The conventional ear-training techniques will work very well, but one additional suggestion may be of value to the clinician working with cleft palate cases. Use a length of rubber tubing to reach from the nostril to the ear. Sounds and air passing through the nasal cavities will reach the ear directly and with dramatic effect. Control of naso-pharyngeal port movement may be checked easily and effectively in this way and even a slight increase or decrease in nasality can be quickly detected. Use the rubber tubing in conjunction with many of the drills presented earlier. It is a useful addition to your armamentarium.

No work with a cleft palate case can be considered successful until it carries over into sequential speech. No cleft palate case can really be helped until personal, physical, educational, and social problems have been met. The few practical techniques discussed briefly in this paper have pointed out methods for dealing with only one phase of the general sequence of speech training, which, in turn, is only one phase of the total rehabilitation needed by cleft palate cases.

[1]Procedures and rationale in blowing drills have been discussed at length by Eckelmann and Baldridge (**1**), Kantner (**2**), Wells (**3**), and by the Wisconsin Bureau for Handicapped Children (**4**) in a recent bulletin.

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News and Announcements

Miriam D. Pauls, Editor*

[As has become the custom, we should like to present in the June issue a full survey of work in Speech and Hearing that is being offered in various colleges and universities this coming summer. This requires that all such information be in the hands of the Editor of News and Announcements by April 1. All material should be addressed to Miss Miriam Pauls. The School of Speech, Northwestern University, Evanston, Illinois. We wish to take this opportunity to thank the people who have sent in material in the past and to urge that everyone feel responsible for keeping all of us posted on developments in his particular locality.]

The Speech and Hearing Clinic, Ohio State University, Columbus, under the direction of Dr. D. W. Morris, is rapidly expanding its facilities, staff and services. The Clinic is carrying on a fee basis the referrals from Veterans Administration (Vocational and Medical), the State Bureau of Vocational Rehabilitation, the Division of Services for Crippled Children of the State Department of Welfare, the Ohio Society for Crippled Chidren, and the Franklin County Society for Crippled Children. Four otologists are serving as consultants, Dr. Russell Means, Columbus; Dr. Norvel Martin, Gallipolis; Dr. Dan Brinckley, Marian; and Dr. Lowry, Columbus.

The following persons are on the staff: Dr. D. W. Morris, Professor; Dr. Marie Mason, Assistant Professor; Dr. Edward Shulman, Assistant Professor; Dr. Henry Moser, Assistant Professor; Stanley Ainsworth, Instructor; Tom Anderson, Instructor; Frank Robinson, Instructor; J. Clark, instructor (Clinical); Mabel Jean Schmeer, Acting Instructor; Ray Tew, Marjorie Dew, Marguerite Thompson, Jacqueline Benfer; Dorothy Stokes, Assistants; Maurice Whitlock, Acoustic Technician; Shirley Brigance, Graduate Assistant.

Mabel Jean Schmeer is in charge of a research project for the screen testing of the hearing of elementary school children. This project is jointly administered by the Department of Speech and the University School with the close cooperation of the Department of Public Health.

Veterans Administration has designated two of its hospitals as centers for the treatment of aphasics. They are the hospitals at Van Nuys, California and Framingham, Massachusetts.

The Central States Speech Association will hold its annual meeting at the Congress Hotel, Chicago on April 2, 3, 1948.

The International Council for Exceptional Children will hold its annual convention at the Fort Des Moines Hotel, Des Moines, Iowa on April 25-28, 1948. The president of the organization is Harley Wooden, Superintendent, School for the Deaf, Flint, Michigan.

The Ohio Speech and Hearing Therapy Association will meet March 12, 13, at the Deschler-Wallace Hotel, Columbus, Ohio.

The second meeting of audiologists was held on January 24 at the Audiology Section, New York Regional Office of the Veterans Administration. It drew a large crowd with a widespread representation from the eastern seacoast and the Middle West.

*Miriam D. Pauls (M.A., Wayne) has recently resigned as Co-Director, The Hearing and Speech Clinic, U. S. Naval Hospital, Philadelphia, in order to complete her doctorate at Northwestern University.

Again no formal papers were presented and pertinent topics in audiology were introduced by the chairman and then the discussion thrown open to the assembled group. This further indicates the growing interest in the field.

The Bureau of Maternal and Child Health of the Michigan Department of Health has supported an experimental hearing program conducted by the Speech Clinic, University of Michigan, in close cooperation with the Rackham School of Special Education, Ypsilanti, Michigan. Seven hard of hearing children were fitted with hearing aids and given auditory training for a period of six weeks during the summer of 1947. The program served as a trial balloon and its success points to the possibility of developing such summer programs still further.

The Cleveland Foundation has granted $5,000 to Ruth Lundin through the Cleveland Hearing and Speech Center for research in problems of the cerebral palsied child. The purpose of the grant is to correlate all facilities and agencies in the metropolitan area and to determine the speech and hearing needs of such children. Research will be carried on to determine possibilities for speech improvement.

One of the most interesting stories of American Education is the development of the Oak Ridge, Tennessee, Public School System. It is an example of what can be done with vision in a war emergency. The school system, like the whole town, was created from scratch and the results are highly commendable. Of particular interest is the fact that the speech and hearing therapists are members of the elementary guidance staff and work closely with the guidance director, the social service workers, the clinical psychologists, and the psychometrist. This is the third year for special work in speech and hearing though the school system itself only dates to the fall of 1943. Miss Kathleen Presley and Miss Sarah Peters are the teachers of speech correction and hearing therapy. The whole school system is under the Atomic Energy Commission. There are nine elementary schools, one junior high school and one senior high school.

As a result of a study made possible by a grant from the Kellogg Foundation to the Nebraska State Department of Instruction, a very interesting bulletin entitled *Special Education: Meeting the Needs of Handicapped Children in Nebraska* is now available. Nebraska is engaged in a rapidly expanding program to help the handicapped child. The Nebraska Society for Crippled Children has contributed the money for the salary of a State Supervisor of Special Education. The Society is also subsidizing the cost of a university off-campus course in speech development and speech correction for city and rural teachers that has been given in a number of different communities to date. The organization is also subsidizing the clinical and traveling costs of a diagnostic clinic.

Mrs. Lydia Newton is the Speech and Hearing Consultant for the Arizona Society for Crippled Children. She has conducted a hearing and speech survey in six counties in order to accumulate data to push pertinent legislation. Last summer a Speech and Hearing Clinic was held at the University of Arizona. The program will be repeated this coming summer at Flagstaff State College.

Canada was represented by three therapists at the convention in Salt Lake City: Miss Marie Crickmay, the speech therapist of the Victoria, B. C. public schools, Mrs. Burgess, who is in charge of drama for the Saskatchewan Recreation Movement, Regina, Saskatchewan, and Miss Ruth Lewis, the speech therapist at the Hosptial for Sick Children, Toronto. Welcome!

The Speech and Hearing Laboratories at the University of Nebraska were established in the fall of 1940. Since that time the laboratories have expanded in service, personnel, equipment and space.

Service to University students is given first consideration. Activities of the laboratories include the Junior Division speech and hearing testing program, diagnostic and retraining services to any University student referred for special speech or hearing problems. Similar services are available to adults outside of the University, and to children in the state through the University Extension Division. Extension services include traveling diagnostic clinics, off-campus speech correction classes and on-campus lip reading and speech improvement classes.

On the campus students are serviced through group therapy and as individual cases. Foreign dialect cases, stutterers, hearing loss cases and prospective teachers who are deficient in speech make up the various groups receiving retraining. The laboratories are located on the second floor of the Temple building.

Dr. Leroy T. Laase, Chairman of the Department of Speech and Dramatic art, acts as director of the speech and hearing laboratories; Lucile Cypreansen is supervisor of the laboratories.

The Memphis Speech and Hearing Center, Inc. is having a period of rapid growth. The Center is sponsored by the University of Tennessee Medical School, the Shelby County Chapter of the Tennessee Society for Crippled Children and Adults, and the Memphis Junior League. On September 1, 1947, George Falconer assumed his duties as director of the unit after completing two years' study and work in the Research Department of Central Institute for the Deaf. The Center has facilities for the scientific evaluation of hearing and the selection of hearing aids. Plans are being drawn up for a complete rehabilitation program for speech and hearing defectives.

The Utah Speech Correction Association is actively fostering a speech program for the state. Miss Susie A. Niles, who is a speech correctionist in the Salt Lake City Public Schools is the president. Dr. R. L. Jones, Utah State Agricultural College, Logan is the Vice-President. The secretary-treasurer is Mrs. Elizabeth Fruewold, a teacher at the School for the Deaf, Ogden. They are working on a long range program establishing speech correction at the University of Utah, Utah State Agricultural College, and Brigham Young University.

A pre-school class for deaf children has been started in Tampa, Florida. Any child between the ages of three and five is eligible as the program is part of the county school system. The teacher is Mrs. Dorothea Morin. Dr. Sherman Smith is serving as consultant.

Dr. Hallowell Davis, director of research at the Central Institute for the Deaf, was appointed chairman of the ultra-sonics panel of the Air Forces-Navy Aeronautical Board, at a meeting of the group at Wright Field, Dayton, on October 15, 1947. Dr. Davis, consultant to the Surgeon General on problems of deafness, will work on the possible physiological effects of high-frequency sounds beyond the normal hearing range which are encountered by personnel in jet and rocket aircraft operation. Appointed in 1946 to head research at Central Institute in diagnostic methods in ear diseases and psychological testing of hearing phenomena, Dr. Davis will represent the Air Forces on the panel.

The Interim Session of A.M.A. was held in Cleveland, Jan. 5-8, 1948. Clinical demonstrations and conferences were conducted on conservation of hearing and what the physician in general practice can do about it. The chair-

man of the committee was Dr. Dean Lierle, Iowa City. The following demonstrations were given twice daily: modern methods of selecting and fitting a hearing aid, conducted by Dr. Charles E. Kinney, Cleveland, Dr. Raymond Carhart, Evanston, and Miss Eva Thompson, Philadelphia; demonstrations of lipreading given by the Cleveland Hearing Center under the direction of Mr. Howard Carter, with the cooperation of Dr. Warren Gardner and Mrs. Rachel Davies. In the question and answer conference, the following subjects were discussed: fenestration operation, therapeutic value of radium in otology, testing of hearing of school children, fitting of hearing aids and the role of the physician in a program for conservation of hearing.

Federal planners reported that a combined five hundred bed hospital and medical research center is planned for early enlargement of the National Institute of Health at Bethesda, Maryland. Commissioner W. E. Reynolds of the Public Buildings Administration disclosed that Congress has allocated funds for plans and that the development will be built on property across Rockville Pike from the new naval hospital.

The Institute of Rehabilitation, one of the principal units of the proposed New York University-Bellevue Medical Center, will establish interim quarters January 1 at 325-337 East 38th Street. The move is a result of the generosity of the Milbank Memorial Fund coupled with a $25,000 gift from Bernard Baruch. The institute plans to receive patients as soon as necessary changes are made in the new quarters. Thirty-six dormitory patients at any one time and 150 outpatients a day will be treated in the interim institute, with all eligible except the indigent sick of New York City, now cared for in rehabilitation wards at Bellevue Hospital. Dr. Donald A. Covalt, formerly director of medical rehabilitation for the Veterans Administration and now associate professor of rehabilitation at New York University College of Medicine will be clinical director. His wife, Dr. Nila K. Covalt, formerly physical therapy director for the Veterans Administration is now in charge of physical medicine. Dr. Howard A. Rusk, chairman of the department of rehabilitation, will be executive director. Patients able to pay suitable fees will finance themselves. By law, persons entitled to rehabilitation in order to earn a living will have their expenses borne by federal grants.

A two-piece hearing aid, designed and tested by the electro-acoustics committee of the Medical Research Council, is being manufactured for free distribution by the British Government. It is part of the program 'Free Medical Treatment for All.' In reply to a question in the House of Commons, Mr. H. Morrison, a member of the Government, said that models of the new aids had been tested at clinics in London and Manchester on 27 persons with various degrees of deafness and well practiced in the use of aids. Comparison was made in each case with the patient's own previously used aid, and also with a highly recommended American instrument. Twenty of the patients heard best with the new aid, and three others equally well. All the patients commented on the new aid's exceptionally good reproduction and preferred it on that account.

Lenox Hill Hospital, New York City, opened a cerebral palsy preschool center November 17. The clinic begins the rehabilitation of children before they start to school. According to Dr. George G. Deaver, medical director, fifty children will be carried as regular visitors to the clinic, and an additional number will be helped by parental instruction. Although a fee of $2.00 is charged for each visit, the clinic is almost wholly financed by the New York State Association for Crippled Chil-

dren, the National Society for Crippled Children and Adults, and Lenox Hill Hospital.

An advanced seminar in audiometry will be offered during the 1948 Summer Session at the State University of Iowa. The seminar will be conducted by Dr. Scott N. Reger and open to students who have completed an elementary course in audiometry and who are working in the field of hearing conservation.

The four-weeks intensive course in Audiometry and the Selection of Hearing Aids will again be offered by the Departments of Speech, Otolaryngology and Psychology. This course is open to anyone who can meet college entrance requirements and includes supplementary lectures in Lip Reading, the Psychology of the Acoustically Handicapped, Speech for the Hard of Hearing, and the Anatomy of the Ear, Nose and Throat.

As a part of the summer program, a series of guest lecturers in the field of speech pathology and hearing conservation will be presented. Guest lecturers will include Dr. Hallowell Davis, Director of Research, Central Institute for the Deaf; Dr. Robert West, Director of the Speech Clinic, University of Wisconsin; Miss Eva Thompson, Philadelphia Naval Hospital; and Helmer R. Myklebust, Director, Child Study Laboratory, New Jersey School for the Deaf.

The University of Iowa Speech Clinic will again hold a summer clinic for speech defectives during the summer session of 1948. All types of speech defectives will spend six weeks in residence in Iowa City devoting full time to the correction of their speech defects.

A dormitory program will provide residence for forty children of up to 18 years of age. These children together with about thirty others who will live in their own homes or with relatives, or in homes supervised by the State Division of Child Welfare, will enjoy a program of supervised recreation in addition to their speech correction work. The remainder of the speech cases expected at the clinic will be made up of University students and adults. This summer clinic is an integral part of the teacher training program in speech pathology in which courses are being offered in the correction of stuttering, voice and articulation disorders, speech for the hard of hearing, lip reading, organic disorders in speech, and speech pathology.

The program will be under the direction of Dr. Spencer F. Brown, Associate Professor of speech pathology. The number of applications for this summer clinic has been unusually heavy and no further applications are being received for 1948.

A full day devoted to new knowledge about cerebral palsy climaxed the three-day convention in Chicago of the National Society for Crippled Children and Adults. Representatives of the Society's two-thousand member units from 46 states, Hawaii, and Alaska, heard a panel of experts diagnose actual cerebral palsy cases and demonstrate equipment and methods for treatment. Members of the panel were: Dr. Winthrop M. Phelps, medical director of the Children's Rehabilitation Institute, Cockeysville, Maryland; Dr. Meyer Perlstein, chairman, medical advisory board, Michael Reese Nursery School, Illinois Hospital School, Chicago; and Dr. George G. Deaver, professor of physical medicine, New York University, Bellevue Hospital, New York.

Other highlights of the program included a discussion of 'The Development of the Cerebral Palsied Child' by Dr. Arnold Gesell, director, Clinic of Child Development, Yale University; a message to parents of cerebral palsied children by Miss Jayne Shover, field representative of the National Society; and a report by Dr. Martin F. Palmer, director, Institute of Logopedics, Wichita, Kansas, on encouraging developments in speech therapy,

not only for cerebral palsy cases but for persons with many kinds of speech difficulties.

The Society reelected Col. E. W. Palmer of Kingsport, Tennessee, as president. William Jaenicke, San Francisco, California, and Dr. Phelps, were newly elected as vice-presidents, and Gerard M. Ungaro of Chicago was elected treasurer. Lawrence J. Linck, the Society's executive director, was chosen for his third term as secretary.

A bulletin from the American Hearing Society calls attention to a scholarship which it holds for a prospective *hard of hearing* teacher of lip reading to hard of hearing adults. The scholarship offered in 1948 is $100. The winner of the scholarship may take the normal course from any normal training teacher, or school or university in the United States offering a course acceptable to the Teachers' Committee of the American Hearing Society. The scholarship must be used within one year from the granting of the award. Applications from those who are teaching lip reading now cannot be considered. A further statement of requirements may be obtained from Miss Rose V. Feilbach, 2431 14th Street, N. W., Washington 9, D. C. Applications must be filed between March 1, 1948 and May 1, 1948.

A model program for individual examination of more than 21,000 children for sub-normal hearing has been set up in Will County, Illinois, under the supervision of the Advisory Committee on Hearing Conservation and Rehabilitation. Representatives of ten institutions and agencies throughout the state are cooperating in the program which will continue for approximately eight months.

All children found to have subnormal hearing will be directed to general physicians and otological specialists for care. Children who require specialized attention in the form of hearing aid fitting, auditory training, and lip reading will be served through the educational agencies of Will County. The program has been organized to provide continuous follow-up care. It will also provide educational and vocational guidance for several years after the initial procedures have been completed.

The program will be conducted with the active cooperation and support of the Will County Department of Health, the County Superintendent of Schools, the Superintendent of Joliet Schools, and the Will County Medical Society. Institutions and agencies represented in the project include the University of Illinois, the Illinois Eye and Ear Infirmary, Northwestern University, the State Department of Public Instruction, the Chicago Hearing Society, the Illinois Teachers for the Deaf, the State Department of Public Health, the State Department of Public Welfare, the Division of Services for Crippled Children, and Illinois State Normal University.

The 1948 Vassar Summer Institute for Family and Community Living, under the directorship of Dr. Mary Fisher Langmuir, will offer classes for hard of hearing children and workshops and seminars for teachers interested in the problems of hard of hearing children. There will be places for approximately fifteen children, aged four to twelve, in the Children's School. To be eligible for these classes, a child must be hard of hearing but not totally deaf.

A seminar for the study of the problems of hard of hearing children will be conducted for a group of approximately 25 teachers, and will be open to teachers who wish to prepare for special work with hard of hearing children and to regular classroom teachers who wish to know more of the special needs of such children in their classroom situations.

The Vassar Summer Institute is a *family school* for parents, teachers, and other professional workers, held for one month on the Vassar campus.

The children of registrants are enroled in the Children's School which conducts a 24-hour program in which the children are able to enjoy the experience of living away from home with children of their own age without losing the basic security of family life. Parents and teachers may obtain information concerning tuition, scholarships, and the program of the 1948 session by writing to: Vassar Summer Institute for Family and Community Living, Vassar College, Poughkeepsie, New York.

On November 24, 1948, Herbert R. Kobes, M. D., Director, Division of Services for Crippled Children, University of Illinois, Springfield, Illinois, released the following statement:

In our Illinois Crippled Children's program, the need to provide specialized speech correction help to children with crippling conditions, such as cleft lip and palate deformities and cerebral palsy, has been difficult to meet.

To partially solve this problem for children in rural areas, special intensive treatment centers have been held the past three summers in cooperation with four established university and college speech clinics. These resident centers vary in length from six to eight weeks and are planned to provide specialized diagnostic service in addition to intensive speech and hearing rehabilitation.

In order that our experience may be of help to administrators in other states who are faced with similar problems, we have recently completed a 30-minute sound color film showing both the planning and therapy which is carried on in these centers. Copies of this film, 'Speech Training for Handicapped Children,' can be borrowed from our office, allowing us sufficient time to arrange bookings. The film will be sent express prepaid and we ask you to return the film in the same way. It requires a 16 mm. sound projector.

Please feel free to write if you would like additional information about the film or if you would care to arrange a preview showing.

Copies of the film are also available for loan through the Children's Bureau in the Federal Security Agency, Washington, D. C., and the National Society for Crippled Children and Adults, 11 South LaSalle Street, Chicago, Illinois.

Members of the Association will be interested to learn that the Department of Public Education in Lima, Peru, is holding its first exposition of the books and materials of American education beginning March 22 of this year. The announcement was received from Dr. Sara Stinchfield Hawk, who received an invitation to attend as an official representative of the Association. Dr. Hawk also informs us that the Minister of Education in Peru is an American-born educator who went to Peru to teach some years ago. Any material which might be suitable for an exhibit in the exposition should be sent to the Minister of Public Education, Lima, Peru.

The Educational Press Association of America reports a one-day conference held at the Hotel Ambassador, Washington, D. C., on February 24. The day's program included dissussion groups led by three past presidents of the Association and lectures by Larry Prakken and Fred Hechinger (E.P.A. editor and *New York Herald-Tribune* correspondent, respectively) on present conditions in Germany and in Europe as they affect education and the educational press. Other important contributions to the program were made by E.P.A. consultants Jim Yates (art editor of *Holiday* magazine), Richard Darrow (public relations director of the Glen L. Martin Company, Baltimore), Arch Crawford (executive vice-president, National Association of Magazine Publishers), and Laurin H. Healy (advertising and public relations director for Encyclopaedia Britannica Films, Chicago).

Personals

Miss Pauline B. Camp died at her home in Cave Springs, Georgia, at the age of 68, on April 9, 1947.

Miss Camp was a member of America's Who's Who in Education and was awarded an Honorary Life Fellowship in the American Speech Correction Association.

Prior to the attainment of her highest distinction in the speech correction field, Miss Camp, who received her training at the

Clark School in Northampton, Massachusetts, served throughout her professional career in state institutions and the public schools in Georgia, Arkansas, Michigan and Wisconsin. She began her work as a teacher at the Georgia School for the Deaf and later taught mental hygiene at the Universities of Wisconsin, Iowa, California, and Nebraska.

During World War I she worked with the U. S. Army, engaging in psychiatric and therapeutic rehabilitation of service men. In 1940 she retired as Director of Child Guidance and Special Education and returned to Cave Springs to live.

Miss Camp was credited with being the first person to develop a program based on mental hygiene principles for use in the public schools of the United States.

Dr. Leon Lassers, State Department of Education, Oregon, has accepted a position on the faculty of San Francisco State College. He will be the head of the Speech Division and will be in charge of the expanding program for the physically handicapped.

Frances Doyle has been appointed Coordinator of Special Education in the Department of Education, Departn.ent of Public Instruction, California. He was formerly Director of Special Education in the Oakland, California Public Schools. In this capacity he will plan and coordinate the education programs for blind, deaf, hard of hearing, mentally retarded, and other handicapped children.

Mrs. Mary Edith Fox is the Administrative Assistant to the Secretary-Treasurer of the A.S.C.A. This position is effective to July 1, 1948.

Dr. E. Thayer Curry has resigned from the Speech Department of the University of Oklahoma to accept a position on the faculty of the University of Washington.

Dr. Lyman M. Partridge, Director of the Speech Clinic at Utah State Agricultural College for 1946-47, has returned to State Teachers College at Ellensburg, Washington, as Director of the Speech Clinic.

Dr. Dorothy Doob, Instructor in the Department of Speech and Dramatics at Hunter College, has been appointed for one year as Director of the Speech Clinic, The Long Island College Hospital, Brooklyn, New York. She has recently been elected Vice-President of the New York Society for Speech and Voice Therapy.

Tom Anderson is holding a dual position in Columbus, Ohio. He is a half-time instructor on the staff of the Speech and Hearing Clinic, Ohio State University, and serves as the Executive Director of the Columbus Hearing Society. He was formerly on the staff of the Illinois School for the Deaf.

Dr. Claude Kantner is now Director of the School of Speech, Ohio University at Athens. He was formerly on the staff of the Medical School of the University of Oregon.

Lee Doerfler has been appointed Assistant Professor of Audiology, Medical School, University of Pittsburgh. He will assume his duties in July as director of the clinic which is now under construction. He will receive his doctorate from Northwestern this June. A comprehensive program is planned with the aid of funds from the Carnegie Foundation.

Dr. Mary Wehe Huber has accepted an appointment as Assistant Professor, Brooklyn College.

Dr. Jon Eisenson has been appointed Consultant in Psychology, New York Regional Office, Veterans Administration.

Dr. Donald Ramsdell is now Branch Chief, Clinical Psychology, Veterans Administration, Columbus, Ohio. He also teaches a seminar at Ohio State University each quarter.

Dr. Amy Allen, Wisconsin, Associate Professor of Speech and Director of the Speech and Hearing Clinic, T.S.C.W., Denton, Texas, has been granted a research fellowship of $1,500 for each of two years for the study of speech correction. The study will be made of stuttering, speech of the cerebral palsied, aphasia, and delayed speech, in pre-school and primary grades. The study will involve the relationship of the Rh blood factor incompatibility to the etiology of these dysfunctions. It will also be a study of learning to read.

Dr. Wendell Johnson, Director of the Speech Clinic, University of Iowa, will teach speech pathology during the 1948 summer session at the University of Southern California.

Grant Fairbanks, formerly Professor of Speech, University of Southern California, has recently joined the faculty of the University of Illinois as Professor of Speech.

JOURNAL OF SPEECH AND HEARING DISORDERS, 1948, **13**, 82-86

Abstracts of Current Articles

Mary Huber, Editor*

ADAMS, HARLEN M. Speech activities in the secondary school. *English J.*, 1946, **35**, 129-133.

The author makes some proposals for a speech program in the secondary school, presumably in institutions where it is the responsibility of the English teacher to develop effective speakers. In language teaching, importance should be placed upon reading, writing, speaking and listening, providing for the best possible development of each student in these four areas. Three programs are included in the speech field: (1) a clinical program for the defective in speech, (2) a specialized program for about ten per cent of superior speech students, and (3) a speech improvement program for the average students.

An adequate program to develop effective oral communication should include the development of poise, fluency, ideas and effectiveness. More stress should be placed on listening and oral reading. The teacher should include activities and experiences which will help the student to express orally his own thoughts, interpret aloud the thoughts of others, work together with others in discussions, debates, dramatics. The concrete methods which the author recommends for achieving these ends should prove valuable to every prospective English teacher. (*Vera Sirola and Rita Lowenthal, Brooklyn College.*)

BECKER, V. A. Vocational rehabilitation of the hard of hearing. *Hearing News*, 1947, **15**, 8.

The California State Vocational Rehabilitation Bureau has three fundamental services to offer the hard of hearing:

The first, *counseling*, is usually considered the most important part of the service of the Bureau. A vocational diagnosis is made and the case worker prepares to meet the needs of the hard of hearing person. In several cases guidance is needed.

The second service, *training*, and the third, *placement on a job suitable to the handicap*, are provided through the best facilities available. No matter what type of training is chosen it is carefully supervised by the rehabilitation counselor. Training does not mean much unless it is followed by placement on a job. Satisfactory employment must be the objective of every rehabilitation plan.

Hard of hearing clients who apply to the Bureau are automatically referred to a good otologist for a check-up. This is usually followed by a recommendation for a hearing aid. Once supplied with an audicle, the client is encouraged to take training in lip reading, speech correction, and auditory training; 'aural rehabilitation' is the all-inclusive term. (*Laura Butterman, Brooklyn College.*)

CANFIELD, NORTON. Science gives new hope to the deafened. *The Crippled Child*, 1947, **25**, 14-15, 27-28.

A new approach has recently developed so that now it is possible, with proper guidance, for every deafened individual to improve his power to communicate by means of sound and speech. No longer need the doctor say that nothing can be done; no longer are these people doomed to a life of guilt and seclusion.

When the Army realized that a large number of men inducted into the Armed Forces were deafened to the extent that their services were not valuable for Army duty, the possibility of rehabilitating these men was carefully evaluated by the Surgeon General. Under his supervision rehabilitation centers were set up in several parts of the country. The program was so effective that the Army is continuing during peace and has reestablished its center at Walter Reed Hospital. The Navy likewise has the same problem and is maintaining its unit at the Naval Hospital in Philadelphia.

One of the first steps in aural rehabilitation was adequate hearing tests to determine the extent of deafness suffered by each individual. Following the tests, an outline of the course in rehabilitation was determined by the directors of the units. A positive approach was used, in that the individual was urged to utilize the hearing that remained to him rather than try to restore the hearing that had been lost. The patients were made to understand what the handicap meant to them. They were given proper hearing aids; they were given psychological counselling; and, they were taught the elements of lip and speech reading. If their speech had deteriorated, they were given instructions in the correction of this defect.

*Mary Huber (Ph.D., Wisconsin) is Assistant Professor of Speech, Brooklyn College, Brooklyn, N. Y., and Consultant in Speech Correction, Lenox Hill Hospital, New York, N. Y.

Several questionnaires have been sent to the men who went through these units and the answers indicated that they received tremendous help. So vital is this work in the field of the rehabilitation of the deaf, that the program will be carried over from military life to give all the people an opportunity which they deserve. (*Laura Butterman, Brooklyn College.*)

CARLSON, EARL R. Give them education. *The Crippled Child*, 1947, **25**, 29-30.

Researchers are attempting to construct tests to be used with children handicapped by cerebral palsy. The psychologist giving the test should be experienced in speech work and should understand the emotional problems of the cerebral palsied child. In testing intelligible speech, the revised Stanford-Binet test is used, but in many cases the tester must familiarize himself with the speech of those severely afflicted.

These speech tests are important for the intellectual and educational training of the individual. The majority of speech disturbances concern expressional speech which is part of the general motor disturbance. The speech of the cerebral palsied varies from very excellent to very poor and incomprehensive speech. The majority have speech defects and the extent of these defects bears no relationship to the degree of mental impairment.

Parents, who delay academic training until the child acquires better control of his hands or speech, are surprised by the rapid improvement in muscle control when the child finally is allowed to go to school. Speech always improves when the child learns to inhibit the excessive sensory stimuli which are irrelevant to what he is doing. (*Laura Butterman, Brooklyn College.*)

CAZIARC, DONALD R. California's program for the hard of hearing. *Hearing News*, 1947, **15**, 9.

In introducing the program pursued in California the author tells of the long struggle on the part of otologists such as George E. Coleman, Francis L. Rogers, Harold Fletcher and others to initiate a concrete program.

In 1933, the Crippled Children's Act of California was changed to include all children with physical anomalies and those with hearing deficiencies. It became the duty of the State Department of Health to employ expert diagnosticians and medical consultants to seek out those children with defective hearing. The State Department of Education supplies consultants when necessary.

The individuals testing the hearing of the children are required to take a special course offered by the state and to receive a special credential before practicing. An advisory committee was formed to assist in the betterment of the testing methods.

All those children whose tests show hearing losses are eligible to be examined by a regular otologist. Standard fees and qualifications for otologists were determined by a special board. Traveling clinics for those areas where there is no permanent clinic were set up. Financial arrangements are worked out for those who cannot afford the expense.

Educational work to develop qualified teachers of the hard of hearing has been furthered but not to the extent necessary. (*Herman Edelowitz, Brooklyn College.*)

COHEN, MORRIS. Methods for teaching (R) to the German émigré, *Quart. J. Speech*, 1945, **31**, 214-216.

The most difficult consonant for the foreigner to acquire is (r). This is the statement upon which Morris Cohen of Hollywood, California has based his article. The first step is pointing out the differences between the German gutteral fricative and our (r) and showing the student the physiological positions for the American (r). The author suggests various methods of training and states that the one which helps most should be practiced until the American (r) is acquired and established.

The clinicians should begin by placing the student's articulatory organs in the proper position for (r). If the student cannot do so, the clinician should not force him to keep trying. If the student is able to effect the correct position he should do so with vigor, imitating the instructor's example.

It is important to note here that the student must hear the sound correctly before he will be able to produce it. The (r) sound is the hardest in our language for the German to learn, therefore he must be able to hear the difference in the sound in order to acquire it. The familiar cheer 'rah-rah-rah' if vociferated sharply and quickly the student will get the auditory and tactile sensation of (r) with a vowel.

In regions where the final (r) is silent, a list of monosyllabic words containing the diphthongs of 'air' and 'ear' should be practiced. As soon as these words are acquired, suffixes should be added to provide the medial and pronounced (r), i.e., 'earring, clearing, airy, barest,' etc. This should be done a suffix at a time and quickly so that the student does not notice at first that he is producing the (r).

Mr. Cohen offers further suggestions: using words in which the accent falls on the second syllable such as (arrest, erupt, irregular); using stress on the second syllable in words beginning with consonants, as (parade, bereft, direct, disrupt); using prefixes (re) and (ro); in this exercise the student responds well in acquiring (r) but

not in establishing it. The clinician should avoid words where the accent falls on the first syllable as (remedy).

The author concludes that the best rule to follow is to test various exercises with each individual and the one which helps the student most is the best one to use. (*Brooklyn College.*)

FISHBEIN, MORRIS. Hearing. *Hygeia,* 1946, **24,** 735.

One out of every ten persons in the United States has a loss of hearing ranging from some difficulty in hearing to almost total inability to hear. The last twenty years have seen greater gains for those hard of hearing by the advancement of scientific medicine. The program of the American Hearing Society for minimizing hearing defects as much as possible includes three major procedures. First is conservation of hearing; second, education of those who are partially or totally deaf; and third, the provision of competent hearing devices and dissemination of information as to their proper use.

The Council on Physical Medicine of the American Medical Association, through its special sub-committee on hearing devices, has examined a great many forms of this apparatus and has available a list of those devices found technically adequate. Anyone who cares to write to the Council on Physical Medicine can get information as to the devices that have been accepted by the Council. (*Raymond Spiro, Brooklyn College.*)

FOREGGER, RICHARD. The value of endotracheal intubation. *J. A. M. A.,* 1947, **133,** 1200-1201.

This report includes descriptions and methods for the removal of accumulated tracheal secretions by suction through an endotracheal tube. The accumulated tracheal secretions resulted from traumatic conditions. Four methods for tracheobronchial drainage are given. In the six cases reported none resulted in permanent defects of speech although two cases showed a temporary aphonic condition. Foregger concludes that (1) endotracheal intubation is therein shown to be a life-saving measure and (2) the human larynx withstood an indwelling catheter for forty-one and forty-eight hours, respectively, in two cases, without permanently harmful results. (*Mildred Allen, Louisiana State University.*)

JENNINGS, DANA C. What can be done for the spastic child? *Hygiea,* 1945, 834-837.

With the therapeutic day nursery at the Michael Reese Hospital in Chicago as his model, the author shows what can be done for the spastic child of pre-school age. In admission to the hospital there is no discrimination as to race or economic status. The parents of the child pay what they can; the rest is contributed by charitable organizations. Before being admitted to the day-nursery, the spastic child is examined to determine what are his possibilities of education. Early training in this respect is all-important. If the child shows improvement over a period of three months, he is fully admitted to the day nursery. In the rehabilitation program, emphasis is placed on speech correction, locomotion, and the use of the hands. Proper breathing is taught as the first step in speech correction. Other facilities of the hospital are available to the day nursery, such as the divisions of pediatrics, orthopedics, physiotherapy, psychology and psychiatry. Unfortunately this model clinic can handle only twelve spastic children at one time. (*Jack Pollock, Brooklyn College.*)

MILLER, MELBA M. Special education for the cerebral palsied child. *The Crippled Child,* 1947, **25,** 4-5.

Handicaps confronting cerebral palsied children may be of a motor, mental or emotional nature. All of these factors must be carefully evaluated in the formulation of a teaching program. The purpose of special education is to reduce the gap between the child's chronological age and his development stage. This gap or immaturity means that a prolonged readiness program must be presented.

Sixty to eighty per cent of cerebral palsied children have speech defects. Sixty-five per cent are left-handed. Fifty per cent have visual defects. Forty per cent have sensory loss (spastic type).

The most essential factor to recognize in planning a special educational program is that the curriculum must be adapted to the needs of these handicapped children. (*Janet Sepersky, Brooklyn College.*)

MULLENDORE, JAMES M. A sense of speech. *Hearing News,* 1947, **15,** 1-4, 12-14.

In analyzing the problem of rehabilitation of the deaf the author emphasizes the importance of developing 'a sense of speech.' Every person who develops a hearing loss is subject to a speech problem. He must learn to feel sounds of speech because he cannot hear them. The speaker who cannot hear all speech sounds will make speech mistakes. The nature of the mistakes will be dependent upon three factors: (1) The longer the loss, the greater will be the number of errors in speech; (2) the greater the loss the larger will be the range of loudness and pitch errors; and (3) the type of loss determines the nature of the defect. In middle ear deafness, the speaker speaks softly and

mumbles. In nerve deafness, sounds are muffled, blurred, or omitted.

In correcting speech mistakes, errors in speech must first be recognized. Then the deaf persons must learn the correct speech sounds through imitation, analyzing tongue, lip and jaw movements for the correct sound. The correct sound must then be mastered in increasingly complex speech situations from sound to word to sentence.

In a loss of hearing situation where speech is not yet defective, speech training should be initiated if the hearing loss is over forty decibels. This training should include phonetic analysis of speech and instruction in the use of pitch and loudness in the voice.

Speech training for the hard of hearing is good for conserving speech, and desirable for making the best possible use of residual hearing through the development of a 'sense of speech.' (*Anita Snydover, Brooklyn College.*)

SIMON, CLARENCE T. Speech Correction. *English J.*, 1945, **34**, 142-147.

The author has dealt with the means of handling the handicapped from the beginning of the primitive era to the methods employed today. He has described how we have progressed from killing them, to accepting them, and helping them. A person who suffers from a speech defect is handicapped; we can, through sound, intelligently administered remedial speech programs, help such an individual to achieve a social, economical and emotional status as any other normal human being enjoys.

Statistics show that 10% of the entire school population needs special type of speech work and that it will cost about twenty dollars per year per child to give him this type of educational training. The author describes the various types of speech defects and says that in order to help them, we must have speech correctionists who are fully and adquately educated in this field. (*Betty Lilienthal, Brooklyn College.*)

SIMON, CLARENCE T. Speech improvement for every child. *J. Nat'l Educ. Assn.*, 1947, **36**, 96-97.

The author cites a typical example of a boy who finds it difficult to speak and explains that he will grow up with this difficulty. He then asks what can be done for such children and, in reply, states that part of the answer lies in a modern program of speech improvement for all pupils. Such a program assumes that each pupil will be placed in communicative situations, that he will have a real evaluation of his activity plus suggestions for his improved future performance. A program of speech improvement should be conceived as a part of the general educational experience of the child; it should not be separated as an added entity. Good speech is learned and formed in the regular classroom. This is not asking the classroom teacher to take on another subject; it is stressing the fact that interest in the speech of the children is a necessary and convenient educational tool.

A program of speech improvement recognizes that pupils are not equal in speech ability and that some adjustment to differences must be made. The author gives a loose classification which is used frequently in planning speech improvement programs for an entire school. At the top are 5% of the pupils with superior muscular and nervous systems and who come from environments maintaining a high and skillful level of communication. On the other extreme are the 10% whose speech patterns are so atypical that true communication is impossible. The great majority of the school population fall into the middle group, neither good enough to star in dramatics or forensics nor poor enough to warrant the highly specialized attention given the speech handicapped. (*Lorraine Deutsch, Brooklyn College.*)

WEKSTEIN, LOUIS. X-Raying the personality: an interpretative evaluation of two projection techniques. *Scientific Monthly*, 1947, **65**, 133-142.

Two projective techniques for examination of personality are explained and evaluated: the Rorschach test and the Thematic Apperception Test. Make-up of the tests and methods of administering are described; examples are given of types of responses and their meanings. Some contrasts in responses between psychotics and well-adapted, intelligent persons are given on the Rorschach, and a sample narrative is presented on the T. A. T. Methods of scoring are described. The author is careful to warn the reader that his statements with respect to interpreting a Rorschach protocol need elaboration and qualification and that the technique is useless in the hands of the layman or even the well-intentioned amateur. The article is well-designed to give information to the non-expert on two tests which are widely used in exploring the personality, techniques which the author characterizes as investigational methods which offer relatively plastic fields with unstructured or loosely structured situations. (*Melba Hurd Duncan, Brooklyn College.*)

WOOD, KENNETH SCOTT. Mental hygiene for the hard of hearing. *Hearing News*, 1947, **15**, 11.

Hearing loss affects no two people the same way. We have to consider the individual and how his hearing disability is affecting his life. The author is concerned with the proper mental approach each hard of hearing person must make before he can

profit by what any hearing program has to offer. He points out the main negative philosophies which must be overcome. 'I want to be alone. My hearing loss doesn't bother me. I am ready to clutch at a straw. Why did this have to happen to me? I just don't know much of anything about this hearing business.'

The author outlines four basic concepts on which the healthy adjustment of the hard of hearing person depends. (1) He must understand his own affliction and his specific ear trouble. (2) He must recognize the limitations imposed by the handicap. (3) He must set out to capitalize to the maximum on what he has left. (4) He should spread out his feelings, attitudes and emotional reactions in front of him for self-examination in order to develop a healthy mind for the long pull ahead.

You can, with these four basic concepts in mind, show by example that a deafened person can lead a happy life if he will prepare for it, and expect it. (*Joan Sugarman, Brooklyn College.*)

WALSH, GERTRUDE. Speech and singing. *Etude*, 1947, 555.

Song is a universal means of conveying emotions, and speech is used to transmit our ideas, and since both speech and song are means of procuring better understanding and cooperation among world groups, these subjects should be well-organized in our educational curricula.

The realization that many singers have poor diction, and many speakers have inadequate voices, is convincing the educators that speech and singing should be closely related in the elementary and secondary schools.

Singing lessons for speech classes would prove to be of supreme benefit for the acquisition of adequate, well-resonated voices. The singer will profit from a study of the International Phonetic Alphabet from which he can derive an exact picture of the forty seconds in our language. The Roman alphabet is entirely inadequate. Furthermore, the phonetic alphabet describes the position of the tongue and lips in order to make the desired sounds.

To summarize her article, Miss Walsh says, 'An understanding of the close relationship between speaking and singing will furnish the student with equipment which will enable him, in his advanced classes, to illuminate his problems and to work with sharply defined direction. From these many groups will come artists of the future whose singing and speaking will be art concealing art in its truest sense with no appearance of strain or exposure of technique. (*Rosalind Gordon, Brooklyn College.*)

ZANGWILL, O. L. Psychological aspects of rehabilitation in case of brain injury. *Brit. J. Psychol.*, 1947, **37**, 60-69.

The author endeavors to review the problems that confront the psychologist in brain injury work and to consider the part which he is called upon to play in rehabilitation and resettlement. It is important to realize that rehabilitation should start, in a graded way, as soon as the patient's condition permits, not when the period of in-patient treatment is at an end.

General characteristics of aphasia patients as well as brief case histories drawn from the author's clinical experience are discussed. Also, general principles which may serve as a frame of reference in the practice of re-education are defined tentatively. Those principles are: (1) compensation, (2) substitution, and (3) direct training. These principles are discussed rather thoroughly and are emphasized by the use of specific cases. (*Santo A. Sollami, Brooklyn College.*)

ZANGWILL, O. L. Psychology, speech therapy and rehabilitation. *J. Coll. Speech Ther.* (Brit.), 1947, **11**, 1.

The article, based on observations at the Brain Injuries Unit, Edinburgh, presents the problems which confront speech therapists in their attempts to rehabilitate the dysphasic. Treating methods of reeducation, reinstitution of lost or impaired skills, and assessment of the results of reeducation in a truly objective manner, the author claims that the speech therapist ideally works hand in hand with the neurologist, who defines the general pattern of the language disability in relation to the cerebral lesion and the prognosis for reeducation, and with the psychologist who quantitatively makes an assessment of disability with special reference to the previous intellectual and scholastic level of the patient.

Using Sir Henry Head's concept of aphasia as a point for departure Zangwill propounds many interesting practices for the speech therapist to follow in aiding the patient. These suggestions for the therapist are discussed under five distinct headings: (1) the approach to dysphasia; (2) method in reeducation; (3) special language disabilities; (4) assessing reeduction; and (5) problems in resettlement.

The author strives to imbue the professional speech worker with a view upon which this article concludes, namely, that the dove-tailed, composite efforts of neurologist, psychologist, and speech therapist are vital, if hoped for ends are to reach their speediest and most fruitful culmination. (*Nathan Goldstein, Brooklyn College.*)

JOURNAL OF SPEECH AND HEARING DISORDERS, 1948, **13**, 87-96

Book Reviews

Ernest H. Henrikson, Editor*

VAN RIPER, C., *Principles and Methods.* (2nd ed.) New York: Prentice-Hall, 1947. 463 pp.

Dr. Van Riper, who recently completed a revision of *Speech Correction: Principles and Methods*, has, in several aspects, broadened his approach to speech correction. First, he has re-organized the contents to include:

I. The Handicapped Individual in Sociciety
II. The Disorders of Speech
III. Understanding the Speech Defective
IV. Psychotherapy in Speech Correction
V. How Children Learn to Talk
VI. The Child Who Has Not Learned to Talk—Delayed Speech
VII. Methods for Diagnosing and Analyzing Articulation Disorders
VIII. Treatment of Articulatory Disorders
IX. The Treatment of Voice Disorders
X. Stuttering: Its Nature and Causes
XI. The Treatment of Stuttering
XII. Cleft Palate Speech
XIII. The Problem of Bilingualism and Foreign Dialect
XIV. Cerebral Palsy (Spastic Paralysis)
XV. Hearing Problems
XVI. The Speech Correctionist and General Procedures in Treatment

The first chapter is somewhat of a plea for continued attention to the physically handicapped which is colored with an emotional historic account of society's treatment of the handicapped in general and the crippled in speech in particular. Since 'a good share of the total handicap which most adult speech defectives possess is emotional in nature,' there is a growing awareness among speech therapists of the emotional conflicts and maladjustments superimposed on speech defects. Speech therapy is, according to the author, but 'one small area in the field of clinical psychology' and he further suggests that the incidence of personality and behavior problems in producing speech disorders is increasing.

Too often speech correctionists employ a trial and error type of speech therapy with negative or sloppy results that could have been avoided possibly by a systematic psycho-therapeutic program. It has been the practice of far too many speech clinicians to impose a diagnosis on an individual, expecting immediate acceptance and changes in behavior. Van Riper points out the importance of helping a person find and admit his problem for himself, implying that a basic job of the psychotherapist is to assist the person in channeling his thinking toward this achievement. One of the most effective ways of doing this is the use of nondirective therapy; however, the elected method of therapy for speech defectives depends on many variables. Regardless of the type of therapy employed to eliminate or minimize personality deviations, the substitute reaction should be objective in nature.

A descriptive development of speech through the pre-school years is included with recommendations as well as cautions for parents directed toward the prevention of speech defects. The necessity of a differential diagnosis of the child whose speech is delayed is considered together with therapeutic measures. Innumerable games and exercises aimed at the acquisition of speech are incorporated into the program.

Inasmuch as 'more than 70 per cent' of all speech problems are articulatory in nature, the diagnosis, analysis and treatment of these defects are presented in lengthy detail. A valuable asset of the book is the careful step-by-step therapy for treating an articulatory problem; this includes isolation, stimulation, identification and discrimination techniques for acquiring correct sounds by both children and adults.

Albeit phonatory disorders account for only 10 to 15 per cent of speech defects, they can be the most complex to deal with. The need for medical and psychiatric attention, in addition to the speech concentration, is stressed in treating certain types of voice deviations.

One of the major revisions of the book deals with the nature, causes and treatment of stuttering. Probably, it is the author's remedial approach to stuttering that constitutes the greatest revision in the book. In general his treatment of the child in the primary stage of stuttering remains unchanged; however, the therapy for the secondary stage has been varied somewhat. The author subscribes to the possibility that the actual form of stuttering can be modified without attempting to prevent its happening. When the stutterer's abnormalities are reduced and the hesitations decreased,

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the fear of stuttering disappears, therefore, the fear becomes 'the signal to warn the stutterer to modify and control the form of any symptoms which might ensue.' The result is highly *controlled stuttering* rather than *avoided stuttering.*

A brief outline of the author's treatment for modifying the form of stuttering includes:

1. Eradication of neuromuscular blocks.
2. Elimination of emotional conflicts.
3. Diminution of fears and acceptance of stuttering as a temporary problem.
4. Removal of secondary symptoms.
5. Utilization of blocks and fears in easy effortless stuttering.

Much of the treatment takes the form of individual interviews, structured speech assignments, and group therapy. The clinical goal should be the achievement of 'good mental hygiene'; disappearance of avoidance and release reactions; and finally, attainment of highly controlled stuttering of an objective nature. This controlled stuttering is gained by teaching the stutterer to attempt feared words exactly as they do non-feared words. Several new methods of word attack are introduced which emphasize the need for relaxed musculature. In addition, it is imperative that they learn to 'keep the mouth in motion' learning to make air flow and speech attempts simultaneously. The author questions the virtue of the bounce method if this other type of fluency is possible.

Speech training for the post-operative cleft-palate type of case should begin after approximately two months have elapsed; whereas, the strengthening exercises can begin as early as two to six weeks following surgery. Many helpful and illustrative exercises for cleft palate speech are included which are especially useful for children.

The problems experienced by the non-English speaking child are not so complex as those of the adult with a foreign dialect; at least they are not so extensive. A familiarity with the phonetic alphabet and rules of stressing and unstressing plus the gradual incorporation of American melody pattern are necessary if foreign dialectual traces are to be eradicated. For the foreigner who has a minimal English vocabulary the author recommends the employment of statistically-treated word lists to economize on effort and time.

Since research indicates that '70 per cent' of cerebral palsied children have adequate intelligence for education, it is unfair to regard them as feeble-minded because many can improve their speech through extensive therapy. Spastic paralysis is divided into atheoid, ataxic, myasthenic and spastic; the therapy being the same as that used in treating delayed speech cases.

In working with the deaf, deafened and hard-of-hearing, the therapeutic program must be planned to fit the needs of the handicapped person. The program will, of course, be of greater scope for the deaf than for the hard-of-hearing. In schools or communities where audiometers are available, the speech correctionist must be able to interpret audiograms; teach lip reading; provide speech therapy; assist in recommending hearing aids. Finally, the author strongly urges all persons practicing speech correction to join the American Speech Correction Association and conduct themselves on a high professional and ethical level.

ALICE M. WELSH
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WEST, ROBERT, KENNEDY, LOU, CARR, ANNA and BACKUS, OLLIE. *Rehabilitation of Speech.* (rev. ed.) New York and London: Harper, 1947. Pp. 650.

The revised edition of this much used text is actually a revision. Possession of the former edition is not sufficient for a student in this field. Practically all of the book has been rewritten, particularly the rehabilitation sections. In the material given by Dr. West on the diagnosis and general philosophical principles underlying this field, many new concepts have been introduced and many of the old concepts have been revised and re-explained in a much clearer way.

The textbook suffers from the general defects that books of this type must necessarily entail. The field of speech rehabilitation has grown so large that any general book must necessarily be a more or less elementary abstract of the material to be found in the various phases of speech corrective work. Any abstract presents certain errors in integration of the material. Authors find it extremely difficult to know what material to include and what material to exclude. The text is of little use to graduate students due to the fact that it covers too much ground too thinly. It would be useful at approximately the sophomore or junior college levels in a general orientation course on speech correction. Perhaps this is the purpose for which the authors intended it.

The rehabilitation material in the book is not nearly so strong on the special types of disorders as is the analysis of the problems. This is probably due to the fact that the authors here again were severely strained by the limitations of space.

The discussion of stuttering, for example, contains no material which any clinician needs to know about the effects of distraction and suggestion, nor does it contain any of the contributions made to this particular field by the application of general semantics in recent years. It is doubtful if a

clinician could be successful with stuttering who would follow only the suggestions found in the chapter on the rehabilitation of stuttering.

On cerebral palsy, the book is somewhat inconsistent and unrealistic. The description is of spastic speech, and is then complicated by not recognizing apparently that cerebral palsy today is considered not as a single condition, but as a more or less loosely grouped series of quite widely variant disorders caused by lesions to various areas of the brain. Thus the text lacks in adequate description of the condition as well as in any adequate presentation of a method or methods for improving that condition. The speech clinician who hopes to work in the cerebral palsy clinic will need a great deal more information and more accurate information than can be found in this text. Here again, the difficulty is probably not due to the particular author's information, but to having insufficient space to cover an extremely complicated field.

The best sections of the book deal with the expansions on hearing. Here a great deal of additional text has been made available, including much of the material reported from the experience of the Army and Navy Hearing Centers.

Under speech reading, however, the Jena method is completely overlooked, if this reviewer is not mistaken, and this seems a rather serious deficiency.

A reviewer has a unique position in that he can sit back and say what's wrong with such an effort as this. There really has been a tremendous amount of work done on this revision. The book is of inestimably better use to the clinicians than the former edition. It is more accurate and it has been made more nearly up to date. Whether it would be possible within the limits of space to write a better text is questionable and it certainly is a textbook which should be within the armamentarium of every adequately trained speech correctionist.

Your reviewer also wishes to mention critically a very badly missed opportunity by the authors of the text. On pages 284 and 285 of the revised edition, a very loose study is made of the kind of preparation people should have in this field. It is unfortunate that the authors did not feel here that they should use the professional association's long study on this matter and present for the beginning student, at least, the necessity for adequate professional preparation in this field as represented by the exceedingly minimal requirements of the American Speech Correction Association. Here, however, the reviewer has a special interest and the authors are, perhaps, excused for not being more careful in presenting this particular point of view which seems of critical importance to this reviewer.

MARTIN F. PALMER
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POLYAK, STEPHEN L., MCHUGH, GLADYS and JUDD, DELKERT K. *The Human Ear in Anatomical Transparencies.* New York: Sonotone Corp. (distr. by T. H. McKenna, Inc.), 1947. Pp. 136.

This book began as a wartime project, under the impetus of the Aero Medical Laboratory at Wright Field, whose staff felt that such a volume would be of great value to aviation medicine if it could be planned to include a comprehensive picture of the system of pneumatic cavities related to the ear. During a later period of completion the task of publication was assumed by the Sonotone Corporation.

According to the authors the purposes of this book are several. Using the novel technique of anatomical transparencies, it attempts to give the professional medical man and student of medicine an exhaustive description of the anatomy and physiology of the auditory system. However, it is hoped that it will serve a much wider group of individuals who, in their various spheres, are interested in acoustics and hearing. In this regard, the authors feel that it will act as a valuable reference work for those persons interested in the close relationship existing between the faculties of speech and hearing.

As might be expected, the most arresting and imposing parts of this volume are the two sections of transparencies, executed in color, which give sectional views of the ear mechanism and surrounding structures. The first of these sections, drawn in life size from a half-profile position, includes most of the lateral aspect of the head from about the superior border of the temporal bone to a point somewhat caudal to the hyoid bone. The first figure shows the outer ear and adjacent structures as revealed when the skin is removed. Then, by a series of thirteen steps, increasingly deeper structures are pictured until the midline point in the head is reached. In preparing the illustrations, it was recognized by the authors that some variation is found in different specimens, and therefore the final drawings were made on the basis of a study of nine heads, from which an average of these individual differences were portrayed.

The second group of transparencies, which are restricted to the middle and inner ear mechanisms and structures immediately surrounding them, are enlarged three times normal size in order that the minute but very important structures might be properly emphasized. This series begins at a point immediately lateral to the drum membrane and progresses medially in a series of eight

steps to a point medial to the cranial opening of the internal auditory meatus. In this same series of illustrations, the membranous and osseous labrinths are also given similar treatment, but for purposes of easier comprehension, are shown separate from the petrous portion of the temporal bone in which they are imbedded. In all of the drawings pertinent anatomical parts are numbered for identification, and this numbering key is consistent for all illustrations throughout the book. A study of these transparencies reflects that great care has been taken to give an accurate and comprehensible picture of all the anatomical structures. The coloring has been carried out in such a manner as to make the various parts easily recognizable one from the other, while maintaining an essentially natural appearance.

Supporting chapters in this book give a well-rounded picture of the ear. The first chapter deals with what the ear is and how it came about. In this respect, consideration is given to the functions of the ear mechanism and its phylogenetic development. The authors feel that throughout the developmental period of man, the ear has become increasingly important, even to challenge the eye in its position of prominence. 'But the eye, superior though it is, remains a purely passive receptor. . . . With the ear, however, because of its close functional association with the sound-producing organs of the mouth and throat, we have a very different situation. For the ear has become the principal medium through which human beings communicate their ideas to one another by means of sounds called "language."'

Chapters Two and Three contain a brief survey of the constituent parts of the auditory system given an over-all picture of the various components, prior to launching out on a more detailed consideration in following chapters. In describing the topographical anatomy of the auditory system, the same procedure is followed in words as is given in the anatomical transparencies, namely, beginning with the most lateral parts of the ear mechanism and surrounding structures, and giving a verbal description which eventually arrives at the midpoint of the head. Included in this description are muscles, glands, bones and cartilages, as well as the blood and nerve supply to these various parts.

Chapter Four is titled 'Speech, Its Anatomical, Physiological, and Biological Foundations.' At the outset, the reader might well wonder just what role a consideration of the speech mechanism would play in a volume devoted to a study of the ear. However, when it is recognized that the authors stress the close relationship existing between speech and hearing as integral parts of man's communicative process, the reason for the inclusion of this chapter is apparent. 'Human speech . . . consists of two distinct but functionally closely related acts. One is the production of a variety of more or less standardized sounds. . . . The other act consists in perceiving the sounds produced by other human beings or by ourselves and in understanding or identifying their conventional symbolical values or meaning. . . In the normal act of speaking, the two functional components are closely related, are interdependent, and are complementary. It is obvious, therefore, that neither of these faculties alone would serve a biologically useful purpose and that neither of them could have been developed independently in the course of human evolution.' In this chapter on the speech mechanism a detailed description is given of the anatomy and physiology of the speech mechanism as well as the role played by the brain centers in bringing about this complex process. In addition, some attention is given to the development of language in man.

Chapter Five contains a treatment of the anatomy and physiology of the external ear. As the title indicates, the structure of the auricle and auditory canal are discussed as well as the purposes served by them. An additional section describes the embryonic development of the external ear from parts of the original gill slit structures, and compares the ear of man with those of such primates as Tarsier, Stenops, the Chimpanzee and the Orangutan. Similarities and differences are described verbally as well as being shown illustrations. Consideration is also given to the phenomenal hearing of bats. With respect to viewpoints recently expressed relative to the sound-reflection system employed by bats in avoiding obstacles and finding prey, the authors state that although the sense of hearing is undoubtedly of primary importance, they wonder if it is some variety of an extremely refined tactile sense, in addition to a fine 'deep proprioceptive sense' may not assist in spatial orientation.

The succeeding chapter goes into detail regarding the topographical anatomy of the middle and inner ear. It will be noted that a discussion of the gross anatomy of the hearing mechanism has already been given in a previous chapter. Now, however, as is the case of the second group of transparencies which are shown as magnified and in greater detail, both the anatomical parts of the middle and inner ear and their adjacent relationships are described and illustrated from a closer vantage point. The apparent desire of the authors is to give first an overall picture of the auditory system and then proceed to closer inspection of the different parts. Thus, in this chapter the tympanic cavity and its contents, as well as the mid-

dle ear structures, are described with close attention given to blood and nerve supply, with understandable stress placed upon the ramifications of the VIIIth cranial nerve.

Chapter Seven carries the process one step further in that certain middle and inner ear structures are portrayed and described microscopically. Among these are the tympanic membrane, the maculi of the saccule and utricle, an ampullar crista of the vestibular system, and in especially great detail, the structure of the cochlea. The Organ of Corti is described and illustrated with great emphasis placed on the structural details and ennervation.

In Chapter Eight the authors discuss the function of the middle and the inner ear. 'Our ideas about the function of the various parts of the middle and inner ear are based upon evidence derived from many sources. That our sense of hearing depends on our ears is a conviction gained from the experiences of everyday life . . . more hazardous are those conclusions regarding the function of the ear that are arrived at from a study of the form and arrangement of the structures of the ear. . . Answers given to various questions, therefore, vary much in their value. Some verge on certainty; others, in the present incomplete state of our knowledge, are mere speculations; the remaining ones are arranged between these two extremes.'

With this point of view in mind, the authors proceed to discuss the role played by the various structures in the hearing process. They seem to prefer the 'resonance theory of hearing' but are quick to point out that many questions still remain to be answered when one attempts to explain the transmission of sound stimuli to the brain.

In attempting to evaluate this book from the point of view of the speech pathologist, there are at once several aspects which appear significant. One obvious point of recommendation would be the stress placed upon the close relationship existing between speech and hearing. Another factor is the relative understandability of the book. Many workers in the field whose background in the intricacies of anatomy and anatomical terms is perhaps limited will find that, while the authors make no concessions to oversimplification of description, there does appear to have been a conscious effort on their parts to present the written description as simply and interestingly as is possible in a treatment of complex and highly intricate structures. The text, in many instances, gives both the common and more scientific names of the various parts, which results in a much less formidable and bewildering presentation than is found in most medical books.

The readability of the written matter, coupled with a rich abundance of excellent drawings—in addition to the transparencies—result in a book which, although it doesn't relieve the reader of the necessity of study and close attention to its pages, does seem to make the work involved less arduous than might be expected.

One might well surmise that a book limited to 136 pages could not possibly go into all possible ramifications of available knowledge concerning the ear; however, it is felt that *The Human Ear in Anatomical Transparencies* does a remarkably good job of presenting an over-all picture of the hearing mechanism within its own set limitations. The average reader, having no definite need to go into great detail regarding minute anatomical relationships, physiology, and research findings, will find in this book an excellent reference work for his purposes.

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CRAIG, WM. C. and SOKOLOWSKY, R. R. *The Preacher's Voice*. Columbus, Ohio: The Wartburg Press, 1946. Pp. 132.

This is a sort 'of handbook for preachers and as such is interesting and has some practical value. The authors encounter the usual problem: the difficulty of teaching any kind of speech, particularly voice training, without a teacher to criticize the performance.

The chapter on 'The Mechanism of the Voice' is conventional, with a much better than usual discussion of breathing. This discussion is illustrated by three full page photographs of a man demonstrating the overt bodily changes during the breathing process. I should say the discussion of breathing is the best section of the book. The rest of this chapter is copiously illustrated with drawings and diagrams of the larynx, lungs and thoracic cavity which, although apparently meant for personal study, show the details of musculature and function usually reserved for courses in anatomy or in the graduate school.

The chapter entitled 'Common Ills of the Preacher's Voice' is not so happily written. It contains five full-page photographs of this same good-looking gentleman demonstrating the position of the lips in phonating *ah* (as in 'Father'), *oh* (as in 'open'), *oo* (as in 'tool'), *ay* (as in 'pay'), *ee* (as in 'eat'). Such example seem to be of questionable value unless implemented by an instructor to explain and demonstrate.

Some of the exercises in the chapter 'Special Voice Training' are probably adaptable to personal improvement of one's voice, especially those in the supplement devoted to the correction of nasality.

Pages 114-132 are addenda to the study of the preacher's voice, dealing with the delivery of the sermon and the interpretative reading of the Scriptures. Obviously such

scanty treatment of these subjects is of little practical or theoretical value.

This volume deserves a place in any preacher's library. For the man who already knows, it will provide an hour of pleasant review and for the untrained speaker, it should be of some benefit if only to stimulate him to find out more.

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GRAY, GILES and WISE, CLAUDE. *The Bases of Speech.* (rev. ed.) New York: Harper, 1946. Pp. 610.

The Bases of Speech is unique among textbooks for the fundamentals of speech course at the college level in that it does not concern itself with any specific speech area such as public speaking, speech correction, interpretation or dramatic art. Neither does it deal with such topics as organization, audience contact or physical responsiveness. It does treat voice and articulation directly. The bases of speech as set forth by Gray and Wise are as follows: social, physical, physiological, phonetic, neurological, psychological, genetic, linguistic and semantic. There is no chapter devoted to the aesthetic aspects of speech. The assumption is that these materials are basic to any of the specialized speech areas or speech skills.

In their preface to the 1946 revision, the authors say of *The Bases of Speech:* 'It represents, in effect, a specific attempt to further the synthesis of contemporary knowledge of speech as assembled from the many branches of science as well as from investigations of ourselves and our colleagues elsewhere. . . . This text has been written for the purpose of providing in accessible form as much of it (this material) as can be reasonably assembled in a single volume.'

One of the most distinguished aspects of the 1946 revision of *The Bases of Speech* is the success with which it has been brought abreast of the research and the thinking in the speech field. The bibliography of the 1946 revision, contains more than twice as many titles as the 1934 edition, and seventy per cent of the added titles are of works published since 1930. References to recent research and points of view are frequent throughout the text. Moreover, a ninth basis of speech has been added to the eight of the previous edition, the semantic basis. Semantics as a field of study has had its greatest development since 1932 and its implications in many speech areas are only beginning to be realized.

Aside from the addition of the semantic basis of speech and the addition of much new and recent material, there are further changes that many teachers will welcome. For example, the material on meaning, shifted from the psychological chapter to the semantic chapter, has been replaced by material on motivation, personality and speech attitudes. The unrelated choral drills, previously in the chapter on the physical basis, have been removed to the appendix and problems calculated to improve understanding of the principles and concepts discussed have been both expanded. In the chapter on the phonetic basis, phonetic differences between standards of speech have been worked out in greater detail and much more attention is given to substandard pronunciations. Though some pronunciations listed as substandard by Gray and Wise are listed as acceptable in Kenyon and Knott's Pronouncing Dictionary of American English, there is general agreement. Any treatment of standards of speech is difficult because pronunciation is so unstable. But educators exert pressure for standardization and the treatment in *The Bases of Speech* is the best of its kind.

The purpose of *The Bases of Speech,* aside from assembling materials pertinent to the field, is not altogether clear. The speech exercises offered in the first, third and fourth chapters put basic knowledge into practice to improve oral communication. But speech exercises are not given for the other chapters, and it is not readily evident how much of the information could be put into practice. Indeed, delving into the mysteries of the nervous system could lead the student away from an aim of better oral communication. Lecomte du noüy in his book, *Human Destiny,* asserts that the 'psychology of man cannot be deduced from the physico-chemical and biological properties of living matter. . . By passing from one scale of observation to the other the scientist discovers new phenomena, but wanders farther and farther from his goal.' Unless the teacher is careful in using this text, such an assertion might be made about the phenomena of speech. It would be too bad if, in studying the neurological, genetic or linguistic bases of speech, the beginning student should find himself digging deeper and deeper into materials that lead him farther and farther from the speech act. On the other hand, the purpose of the text might as well be to offer a historical-factual background for the study of speech as to offer the foundations for better communication. Fortunately, there is a great deal of materials in *The Bases of Speech.* The synthesis of these materials goes little farther than their proximity in the book, but this very fact makes it possible for teachers to choose those chapters useful for a performance course such as a voice and phonetics course, or for a content course calculated to give the speech student a certain sophistication in his field, or a combination of both.

GLADYS LYNCH
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SCHRODINGER, ERWIN, *What Is Life? The Physical Aspect of the Living Cell.* (Cambridge Univ. Press) New York: MacMillan, 1947. 91 pp.

When a leading physicist undertakes to write a book about biology the results are bound to be novel. In this case the novelty is overshadowed by the excellence of the accomplishment. Professor Schrödinger, whose words about quantum physics ring with first-hand authority, very apparently has more than a passing interest in the results of genetic biology, especially insofar as the physical structure and behavior of atoms and molecules can be discerned in the operation of the processes of heredity and cell division.

The book is the outgrowth of a series of public lectures aimed at examining the extent to which the interplay of the physical entities comprising a living organism can be explained in terms of the results of physical and chemical science, and particularly in terms of quantum mechanics. The conclusion to which he leads is a fascinating speculative one.

Reading this book is not easy. To one without at least a sound grounding in elementary quantum theory I fear that much of the argument will seem arbitrary and perhaps incomprehensible. The questions considered are well off the beaten track, however, of the usual speculations of a physicist worrying about problems of the behavior of matter.

Schrödinger traces the development of what he calls the 'naive physicist's ideas about organisms.' In so doing he follows through the examination of the statistical foundation of modern physics to consideration of what relevant contributions to understanding of the observed behavior of animate matter can be made by application of the statistical generalizations of physics.

Along the 'crooked way' to the goal, Schrödinger examines in a refreshingly clear fashion such questions as 'why are atoms so small?' when they are looked at by man. He points out that all physical laws rest on statistical grounds and therefore are only approximate, with the degree of definitiveness of the results increasing as the number of atoms or molecules involved increases. He indicates that any other kind of lawfulness and orderliness that a physicist might think of would be disturbed by the heat motion of the atom. Thus, atoms must be small for objects of sizes easily commensurate with people to behave predictably.

Also along the crooked path Schrödinger develops a picture of the remarkable physical behavior of living cells. He traces the observable details of the fascinating phenomena of the transmission of hereditable characteristics by the division of cells of identical geometrical structure. He examines the reasons for true breeding, for mutations, for localization of definite observed mutations to definite regions of affected chromosomes, for recessivity and dominance in heredity. Schrödinger finds it necessary to use some rather specialized terminology which, though adequately explained, makes the reading somewhat difficult for a person with only a casual acquaintance with the field.

When he comes to consideration of mutations, their rarity, and the ways they can be induced, Schrödinger is driving close to the main theme of his book. Consequently, a great amount of stress is placed upon understanding of the nature of mutation. The phenomena of mutations, their definiteness, and the permanence of genetic structure either of a primary form or of a mutant, point directly toward quantization, and the involvement of Heitler-London forces to point out the connection between 'quantum jumps' and mutations. Even considerations of the temperature dependence of the stability of genes fit neatly with the identification of genes with large aperiodic molecules held in permanent array by the 'solidifying' Heitler-London forces.

Schrödinger brings large numbers of arguments to play, doubtless all of them quite familiar to the genetic biologist, to build up a most convincing picture of the gene, and perhaps even the entire fibre of the chromosome, as a stable molecule, crystal, or solid, all of these being basically similar. The picture he so justifies is the Delbrück model. To me, a naive astronomer, the picture is thoroughly illuminating.

In the last two chapters Schrödinger proceeds for examining the basic phenomena in terms of working theories and models, to the derivation of a general conclusion which, he confesses, has provided him with the motivation for writing his whole book. He concludes that from the picture he has drawn 'it emerges that living matter, while not eluding the "Laws of physics" as established up to date, is likely to involve "other laws of physics" hitherto unknown, which, however, once they have been revealed, will form just as integral a part of this science as the former.' The last two chapters are devoted to preventing misconceptions about what this conception means, and to attempting, without complete success, to clarify it.

He concludes that the characteristic feature of life which transcends others in importance is its evasion of decay into disorder, its evasion of the trend to equilibrium, its evasion of approach to a state of maximum entropy which characterizes all inert matter.

The structure of living matter, Schrödinger reasons, cannot be explained by the workings of the ordinary laws of physics. This is not because of the operation of any

new 'forces' but solely because the structure differs basically from anything yet experimented upon in physical laboratories. In particular, the striking thing about life is the remarkable unfolding of the life cycle through orderly duplication of living cells under the control of a very small number of 'governing atoms' whose supremely well-ordered structure suffices to bring about all of the large-scale hereditary characteristics of a living organism. The extraction of orderliness from its environment by living matter which, by so doing, evades decay to the state of maximum entropy, is in some obscure way, Schrödinger speculates, associated with the presence of the 'aperiodic solids,' the chromosome molecules.

This kind of behavior, Schrödinger believes, cannot be explained by the ordinary statistical laws of present day physics. The clue, he thinks, lies again in the principle of the quantum theory. It seems to have something to do with the older concept of mechanical or dynamical order-from-order principles which appeared to give way at the turn of the century before quantum theory, and to degenerate into purely statistical laws of physics. It has to do with the fact that things seem to behave mechanically or dynamically when they are bound together stably by Heitler-London type forces strong enough to evade the disruptive tendency of heat motion at ordinary temperatures.

Yet, even though life has to do with these things, it is yet, in final analysis, novel and unprecedented. So that the orderliness from which spring the development and unfolding of life is yet unexplained. A new physical principle may perhaps be needed for its explanation.

These final speculations of Schrödinger are both revealing and confusing. To me at least, it is not so easy to follow the steps of the arguments of the last two chapters as it was with the earlier ones. Some of the things revealed in the last chapters are genuinely useful, like the discussion of the workings of the principle of decline of all material things ultimately to thermodynamical equilibrium at the state of maximum disorder or entropy. Yet the book seems, for me, to end abruptly and on an unfinished tone. I have perhaps, in my precis of it, imposed upon it a clarity that misinterprets its true intent. If so, it is because the last pages somewhat elude me. I have a feeling that Schrödinger has not fully exploited the sharpness of the image he has developed in the earlier pages.

An 'epilogue' on determinism and free will completes the volume. Schrödinger humbly and sincerely appends it as a subjective evaluation of the philosophical implications of (1) his examination of the biological mechanism that characterizes living things, and (2) his consciousness of self-direction and self-importance. The argument I find somewhat too abstract to follow with any clarity. For me it is of lesser value than the rest of the book.

Yet, the book, for all this, is an exciting one. It will never command a popular audience in any wide sense. It is hard reading in spots, unless one is content with partial digestion of its content, a not altogether blameworthy pursuit. But for those with an interest in the boundary land between the sciences of inanimate matter and of living tissue, the book is a genuinely rewarding one.

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GILMORE, ART and MIDDLETON, GLENN Y. *Radio Announcing.* Hollywood Radio Publishers, 1946. Pp. 118.

Here is a primer on 'the art that conceals art' in radio announcing. It acquaints the student with basic radio terminology, voice production and speech, timing and pacing, narration and commercial copy. Words of advice are also given by several topflight Hollywood announcers, and the book contains the biographies and pictures of these men as well as illustrations of some of the various types of microphones and studios.

Gilmore and Middleton make no pretense of giving a magic formula for fame and fortune in a crowded profession. They are obviously concerned with an improvement of standards among the existing practitioners. The radio announcer in a commercial radio station is a salesman, and it is becoming increasingly evident that the listening public is resentful of syrupy seduction in the professional manner of the average announcer. Throughout the book, there is emphasis upon the necessity for 'naturalness, sincerity and friendliness.'

The chapter on 'Voice Production and Speech' is not exhaustive, because the entire book is only a manual at best, but the advice on speech which is given to the aspiring announcer is cogent as well as concise. By way of preamble, the authors have this to say: 'Whenever you open your mouth to speak, remember to OPEN YOUR MOUTH and don't mumble what you're going to say, hoping that the person spoken to will hear it. In radio an announcer's conversation is "one-way," and the listener must hear it clearly the first time. In everyday speech you should be natural but careful—precise but not pedantic.'

The exercises which follow are designed progressively to relax the jaw, discipline the tongue and lips, and soften the plosives and sibilants without sacrificing their distinctive character. Since these two forms of fricatives haunt all radio announcers in varying

degrees, the exercises are valuable for veterans as well as novices.

There is no implication that the Gilmore and Middleton book is the 'be-all and the end-all' on the subject. It is a short-course *approach* to announcing. In this respect it is richly deserving of serious study.

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GUTHRIE, E. R. and HORTON, G. P. *Cats in a Puzzle Box*. New York: Rinehart, 1946. Pp. 67.

This book is a report of observations of approximately eight hundred escapes from a puzzle box by laboratory cats. The problem of the study was: *Does the behavior of the cat in the puzzle box go at any point contrary to or in violation of the principle of learning by association?*

The authors devised a puzzle box with a glass escape door. Types A and B could be opened by tilting a pole inside the box. Types C and D required the interception of a light beam from a photo-electric cell to open the escape door. In order that the cats might enter the escape box in the same manner on each trial, a starting box and tunnel were used.

Early experiments with the puzzle box were conducted by Thorndike, who measured learning in cats in terms of time required for the cat to effect an escape from the box. Thorndike concludes that learning takes place because the time required for escape decreases with successive trials.

The authors of this book believe that time of escape is not an accurate measure of the learning process. Their theoretical position is that the individual movements in an act are the items that are associated in learning, and that the details of the movements of escape should be predictable.

The experimenters observed and recorded all of the movements of each cat, from the time of entry into the puzzle box from the starting tunnel until the actual escape was accomplished. A photograph of the cat's position was taken at the exact moment of escape from the box.

The authors summarize their observations as follows:

'On entering the box the cat may do any of these things. Most of the cats promptly approached the opened door on their preparatory runs, hesitated, and then made an exit. Most of the cats, after their three preparatory runs, entered the box and walked to the closed door. Most of them remained for some time at the front of the box, clawing or nosing the glass and then exploring the edge of the door or the joint of glass front and floor. As a rule they gave no sign of noticing the pole except that collisions with it did not occur often as they moved about. If escape did not occur in a few minutes most cats spent some time mewing or grooming without other activity. An occasional cat became excited and bit and clawed at certain parts of the apparatus.

'Eventually some movement brought the cat in contact with the release mechanism; there was an audible click and the door opened. If the cat was in a favorable position, one look at the opened door was followed by approach to the door, and this by hesitating exit. The apparatus was then reset and the cat replaced in the starting box at the end of a minute or so.

'One of our first observations was that the second entrance in the box was followed by detailed repetition of the behavior on the first occasion. In a large number of instances a long and complex path about the box was repeated on the second trial. The cat would stop at the same points; lie down or sit at the same points and head in the same direction.

'This was not always the case; but in those instances in which escape had been achieved soon after entering it was regularly the case. If the cat had been many minutes in the box, we were less sure to observe this repetition. This repetition went far beyond the repetition of acts. It applied to the details of the movement by which the act was accomplished, due to the style and manner of the act. The first performance obviously depended on the "accidents" of the box, its arrangements and features.

'After observing the first trial of each cat, our prediction of what it would do on the next occasion was consequently that it would repeat the performance of the last. In a large number of instances, of course, this prediction failed. Behavior was sometimes different from the beginning. In a number of cases the reason for the difference appeared to be fairly obvious. A noise in the room, a fly on the wall of the box, a movement of one of the spectators would be responded to by the cat and the sequence of movements interrupted, sometimes not to be resumed. In the majority of cases, of course, we could not assign a cause to the failure to repeat. It seems, however, reasonable to assume that each trial might offer many new and distracting stimuli for such interruptions. Some of these would result from slight differences in the sequence itself. The cat's progress about the cage, slightly deflected, might change the situation in essential features. A series of steps that had before carried the cat past the pole might now bring it in contact with the pole or threaten such contact. In numerous instances the successful movement was one that had been observed previously as in the case of Cat 1 which jumped several times before a final jump caused it to fall on the release.

'The outstanding characteristic of the cat's behavior was its repetitiousness. But another outstanding characteristic is the special and particular repetitiousness of the end behavior, the series of movements leading to escape. The preliminary behavior eventually disintegrates with practice. This is testified by the normal reduction in the time required for escape which at first requires from five minutes to half an hour or more and at the end of twenty trials is a matter of seconds. This frequently happens with only slight changes in the end action. The third characteristic is change and unpredictability.'

'It is an apparent contradiction to list both repetitiousness and change as characterizing behavior in the puzzle box. But the contradiction is only apparent. We are not dealing with a continuous scale of likeness in successive trials but with a tendency for *all-or-none preservation of action sequences* that are clear reproductions of earlier sequences; patterns of behavior that would not be mistaken for the behavior of any other cat.'

'Another outstanding feature of the behavior observed is the tendency for the final escape movement to become more stable with repetition.'

'. . . . *The reason for the remarkable preservation of the end action leading to escape is that this action removes the cat from the situation and hence allows no new responses to become attached to the puzzle-box situation.* . . .'

The authors conclude from their observations that the 'prediction of what any animal would do at any moment is most securely based on a record of what the animal was observed to do *in that situation on its last occurrence.* This is obviously prediction in terms of association.

'Plans to extend the observations to human subjects remain only tentative. It is our conviction that human behavior shows the same repetitiousness of manner and means as well as of ends. The chief difference lies in the greater repertoire of movements of manipulation possessed by men and in the human capacity for maintaining subvocal word series somewhat independent of posture and action. Thought, which is language in use, is itself as routinized as the movements of the cat. But the fact that thought routines are not completely dependent on action enables them to exert their direction and interferences at new points, and men in a quandary may discover the exit while sitting still or during irrelevant action. Man can name and count. Learning in men is more intricate a process than in the cat. But it is possible that human learning and feline learning both are equally in essence the acquisition of new signals for action through the association of signal and act; and that this association alone and of itself, without dependence on reward or punishment or effect, is adequate for the establishment of a new signal.'

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